DOCUMENT RESUME

ED 262 006 SP 026 584

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TITLE	The Role of Teacher Incentives and Rewards in Implementing a Technological Innovation. Final Report.
INSTITUTION	Bolt, Beranek and Newman, Inc., Cambridge, Mass.; NETWORK, Inc., Andover, MA.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	Mar 85
GRANT	NIE-G-83-0062
NOTE	221p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	Computer Assisted Instruction; *Educational Innovation; *Incentives; *Program Implementation; *Teacher Motivation; Teaching Methods; Writing Instruction
IDENTIFIERS	QUILL System

ABSTRACT

A study was made of the implementation and institutionalization of the "Quill" system, a set of microcomputer-based writing activities for upper elementary school students. The purpose of the study was to gain insight into the roles played by incentives and rewards as teachers attempt to improve their practice with a new innovation. Ten classroom teachers participated. School sites were highly diverse. Through documentation of teachers' use of "Quill," it was determined what incentives and rewards were offered to, and experienced by, the teachers, and how these interacted with the characteristics of the support sytem, school, classroom, and students to influence the implementation of "Quill" and its success as an innovation. This final report documents the background of the study, the research design, findings, and cross-case analyses. Detailed case study reports are presented along with analyses of teachers' implementation of "Quill." "Quill" vignettes are included. Rewards to teachers for putting effort into the innovation depended upon the success of the effort and the teacher's ultimate interest in the innovation. Such rewards were intrinsic, e.g., satisfaction with student progress and a sense of importance derived from involvement with the project. (JD)

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FINAL REPORT

The Role of Teacher Incentives and Rewards in Implementing a Technological Innovation

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NIE Grant No. NIE-G-83-0062

March, 1985

SP 026 584

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THE ROLE OF INCENTIVES AND REWARDS IN THE IMPLEMENTATION OF A TECHNOLOGICAL INNOVATION

Introduction

In recent years, educational researchers have spent considerable energy investigating both effective classrooms (e.g., Brophy, 1979; Good & Grouws, 1979; Rosenshine, 1976, 1978; Medley, 1977) and effective schools (e.g., Edmunds, 1979; Brookover et al., 1979; Brookover & Lezotte, 1979; Rutter et al., 1979). Both areas of research indicate that school personnel, particularly teachers and principals, are central to educational effectiveness. However, although there is general agreement that certain roles and behaviors relate to effectiveness, not as much is known about ways to insure that teachers and administrators will carry them out. This presents serious problems for school improvement efforts for, as Purkey and Smith (1982) point out in their recent synthesis of effective schools research,

> . . . changing schools requires changing people, their behaviors and attitudes . . . Of particular importance is the fact that change . . . will not take place without the support and commitment of teachers . . . (p. 68).

In light of this realization, research needs to clarify what means are most effective in changing behaviors and attitudes. How are teachers' commitment to improvement to be fostered? How do the new behaviors and attitudes of individual teachers differ, and with what effect on students, teachers, and administrators? How do the contexts of schools and classrooms affect improvement?

Incentives and rewards are two factors educational research has identified which help build commitment among school personnel and motivate them to perform more effectively. Spuck (1974), for example, suggests that teachers

"exchange their cooperative behaviors for desired rewards offered by and within the school" (p.18).

Unfortunately, research-based descriptions of the ways incentives and rewards function are much less precise than the well-known discussions of effective schools and teaching. As Sieber (1981) indicates, references to the important role to be played by incentives in educational change have not been accompanied by "an effort to identify types of incentives, their sources, the conditions under which they operate, or the way they should be combined to enhance motivation" (p. 115). What is needed is a deeper understanding of how incentives and rewards operate to motivate school personnel, particularly teachers, to assume the roles and behaviors associated with effectiveness.

This study has sought to gain insight into the roles played by incentives and rewards as teachers attempt to improve their practice. Specifically, The NETWORK, Inc. and Bolt Beranek and Newman, Inc. (BBN) chose to study the implementation and institutionalization of the QUILL system, a set of microcomputer-based writing activities for upper elementary school students. We developed case studies of eight classrooms in which QUILL had been introduced as an innovation. We documented teachers' use of QUILL, determined what incentives and rewards were offered to and experienced by teachers, and examined how these interacted with the characteristics of the support system, school, classroom, and students to influence the implementation of QUILL and its success as an innovation. As our literature review points out, this is a complicated area which suffers from lack of clarity and specificity. We believe this study has been effective and helpful in "unsnarling" the tangled interrelationship of factors in this area for three reasons:

- We have focused on a specific innovation that, while well-defined, is complex enough to require significant changes in classroom instruction and flexible enough to allow a wide variation in use by different teachers. We have seen a range of variation that has allowed us to draw some general conclusions about the factors affecting rewards and incentives.

- Our focus on the implementation of new classroom practices has allowed us to bring to bear our deep understanding of the process of innovation, and the relationships between behaviors, attitudes and external conditions. Because of our extensive research and experience, we have known where to look and what to ask about to better understand how rewards and incentives come into play. Our methodological approaches allowed us to look more clearly at implementation and its results than have most previous studies.

- The innovation on which we focused combined three areas that are likely to have an impact on teaching in the near future: technology, writing, and classroom management. The introduction of microcomputers has clearly fostered a technological revolution in our classrooms (Naiman, 1982; Papert, 1980). Likewise, the recognition that our educational system is failing to teach writing and higher level thinking skills (Fiske, 1983; National Assessment of Educational Progress, 1981) has led to a greater emphasis on these areas. And the effective school and classroom research points clearly to the need for teachers to rethink how they organize and manage their classrooms (Purkey & Smith, 1982).

Because the introduction of QUILL into a classroom can cause significant changes in its structure (e.g., teacher-student relationships), we expected and got substantial payoff in terms of understanding the roles of incentives and rewards. Our findings have been translated into recommendations for how schools and districts can organize and structure their policies, activities, and support systems in such a way that incentives to teachers are maximixed, as are the rewards that result from their efforts.

Background

Prior Research on Incentives and Rewards

During the last two decades, a large number and variety of school improvement efforts have been launched in an attempt to improve the quality of education

in our schools. Accompanying these efforts has been an equally impressive amount of research focusing on school improvement processes, educational change, knowledge utilization, innovation implementation, and a variety of other related process.

One of the most recent and most comprehensive studies was conducted by The NETWORK, in conjunction with several other institutions, to study changes that had occurred in schools supported in their improvement efforts by several federal dissemination strategies (Crandall & Loucks, 1983). The factors found by this study and several earlier ones (e.g., Berman & McLaughlin, 1975, 1978; Emrick, Peterson & Agarwala-Rogers, 1978; Louis & Rosenblum, 1981) to influence the success of change efforts include the nature of the practice being implemented; the commitment and preparation of the people who implement the new practice; the assistance and support provided by building and central office personnel; and the leadership and expectations of school administrators.

Although some contradictory findings are apparent within studies of implementation, it is clear that people, particularly teachers, are both central and important. Several studies, for example, indicate that teacher commitment is critical. What they do not indicate, however, is why teachers should give such commitment. What motivates them to do so? What are their personal goals? What incentives and rewards are at work, and how do they interact with all the other factors research has shown to be important? A more recent study of general dissemination programs highlights incentives (both personal and organizational) as key contributions to the use of new knowledge, but again we are left with more questions than answers (Louis et al., 1984).

A review of the literature on incentives and rewards and the related concepts of motivation and work motivation indicates a small subset of research studies and theoretical articles which focus on the relationship between incentives and/or rewards and educational change, innovation, and/or implementation (e.g., Mann, 1978; Pincus, 1974; Sieber, 1981; Huberman & Miles, 1982). Another subset of work within the literature, also applicable to the study proposed here, focuses on the relationship between incentives, rewards, and/or motivation, and teacher performance and effectiveness (e.g., Mitchell, 1983; Ashton & Webb, 1982; Webb, 1982; Silver, 1982). Both subsets add substantially to other work in the field, much of which has focused on providing taxonomies, models and frameworks of incentives, rewards and motivators (e.g., Herzberg, 1966; Vroom, 1964; Barnard, 1938; Clark & Wilson, 1961).

Unfortunately, much of this work has been marred by a lack of conceptual clarity. The field has not yet converged on definitions of "reward" and "incentive". Numerous categories have been proposed, however, for both: intrinsic, extrinsic, ancillary, or affective; formal or informal; individual or forming a system; from internal or external sources; individual, group, or organizational. In his recent attempt to reach conceptual clarity, Mitchell (1983) categorizes rewards as intrinsic (subjective/psychic) or extrinsic (objective/physical), and incentives by distribution: individual, group or organizational. Unfortunately, his attempts at definitional clarity have been somewhat disappointing (Cohen, 1983).

In addition to conceptual problems, substantial disagreements exist within the literature concerning some fairly basic issues. For example, Vroom (1964) and Cherrington, Reitz, and Scott (1973) claim job performance and worker satisfaction are essentially independent; Herzberg (1966) maintains that the

workers' satisfaction results in improved performance; and Porter and Lawler (1968) contend that worker satisfaction is a result of job performance. In the education area, however, some agreement does exist. For example, research generally indicates that there is a relationship between student performance and teacher satisfaction (e.g., Spuck, 1974; Lortie, 1975; Thompson, 1979; Miskel, 1974). This at least provides some common ground upon which to base additional work.

Such "common ground" is exceedingly limited, however, particularly with respect to the role of incentives and rewards in implementing educational innovations. In the well-known "Federal Change Agent Study," Greenwood, Mann, and McLaughlin (1975) found that tangible extrinsic incentives such as money "did little or nothing to secure good project implementation" (p. 37). In the related area of work motivation, Herzberg (1966) makes the similar claim that "hygiene factors" (e.g., salary, good working environment) neither satisfy nor motivate. Spuck's (1974) research on the effects of rewards on teacher absenteeism, recruitment, and retention yields similarly consistent findings. Herzberg (1966), however, found that extrinsic rewards were related to teacher dissatisfaction and Spuck (1974) learned that they induced teachers to join and remain in the system. Thus, extrinsic incentives cannot be ignored in implementation efforts, even though they appear to have little or no direct effect on the implementation process.

The literature consistently indicates the importance of intrinsic incentives and rewards in implementation (e.g. Huberman & Miles, 1982; Louis et al., 1984; Mann, 1978), job performance (e.g. Silver, 1982; Porter & Lawler, 1968) and teacher recruitment, absenteeism, and retention (Spuck, 1974). Specific to the implementation process, Huberman and Miles found that multiple

incentives operate to affect the adoption of new practices. Most prominent in their study were intrinsic incentives associated with career plans, the importance attached by "significant others" in their school district to the innovation, and the teacher's initial attitude toward the innovation. Satisfaction and personal growth, recognition, professional gain, student achievement, student-teacher interaction, and student behavior/attitude change have been cited by teachers as rewards associated with the implementation of innovations (Loucks, Cox, Miles, & Huberman, 1982).

Pauly (1978), in an examination of administrators' decisions about innovations, found that career pursuit was a particularly important category of incentive for them. In their study of twelve school sites, Huberman and Miles (1982) found similar results for teachers who were involved in implementing new practices: the frequency of incentives and rewards associated with professional growth exceeded those associated with student gains.

Some rewards and incentives are effectively negative, i.e., they act as sanctions or disincentives. For example, teachers may feel forced to accept an innovation. Huberman and Miles (1982) found that teachers mentioned "administrative pressure and constraint" more often than any other reason for adopting an innovation. At other times, different incentives and rewards conflict. For example, Sieber (1981) suggests that teachers who are rewarded for innovating often face the disincentive of the loss of autonomy.

Both the notion of conflicts among incentives and rewards and the existence of negative rewards and disincentives suggest the importance of identifying which incentives and rewards operate under what conditions. They also imply the potential significance of determining the ways in which incentives and rewards

can be combined such that conflicts are minimized, disincentives and negative rewards are offset or compensated for by other incentives, and positive rewards and the positive effects of disincentives [e.g. administrative pressure (see, for example, Huberman and Miles, 1982)] are maximized. With the exception of Sieber, the literature is unresponsive to these and related issues and the effects they can have on teacher attitudes and behaviors and the overall implementation process.

The literature is equally inadequate in a number of other areas. For example, little attention is paid to the effect of time and duration of the innovation on the role of incentives and rewards. Pincus (1974) suggests that different rewards accompany different stages of the change process. Huberman and Miles (1982) imply a similar view, indicating that career incentives, for example, are not necessarily operative at the time of adoption; rather they may emerge during the implementation process as the implications of the practice become known. But it remains unclear which incentives and rewards accompany which stages; when and if certain rewards lose their effectiveness over time; and whether rewards must be known prior to the implementation to maximize effectiveness.

The literature on incentives and rewards is perhaps weakest in its treatment of their interaction with other factors that influence school improvement efforts. Yet, in our experiences with implementing QUILL in its pilot year, this was the area of greatest interest. It appeared, for example, that incentives to "innovate" sometimes came into conflict with school district norms. The most robust use of QUILL demands flexible classroom management, where some students may miss certain class activities. Some teachers were

caught between district-mandated rules about classroom organization (e.g., certain work must be done in class, not at home) or other curriculum priorities, and their desires to use QUILL as much as possible.

In other cases, teachers were motivated to use QUILL by an administrator's desire to be seen as "riding the technological wave". Such pressure resulted in different uses of QUILL. One teacher minimized use, confining it to time and curriculum applications where it could easily "fit". Another teacher in the same district started her use in a very lock-step fashion, feeling unsure and unconvinced, but immediate and continual success with her students resulted in a broadening of applications and embedding QUILL in ongoing classroom life.

Louis and her associates (1984) point out that whether the incentives to implement an innovation are personal or organizational, the outcome is always affected by the "social processing" of the innovation within the district. How is the innovation received, in general? What activities occur in the district when the innovation is introduced? Why do similar incentives cause teachers to act in different ways that result in different rewards? What other factors interact and "influence the influence" of particular incentives (and disincentives)? As the current study began, the literature on rewards and incentives, particularly with respect to innovation implementation, gave us few answers.

Before turning to the conception of the role of incentives and rewards in the change process which evolved through our study, we turn to a description of the innovation that we focused on, and how its characteristics will maximize the outcomes of this study.

The QUILL System and Its Role in the Study

QUILL is a set of computer-based writing activities developed by Bolt Beranck and Newman and The NETWORK, as part of a three-year project funded by the Department of Education's Libraries and Learning Technologies Program. The QUILL package consists of software, an extensive Teachers' Guide (which includes a three-week "cookbook" for how teachers should introduce the software to their classes) and a training plan.

The QUILL software is a collection of writing tools and writing environments. It includes a text editing program (Writer's Assistant), and programs for use in prewriting activities (Planner), for composing and storing writing (Library), and for communication (Mailbag) (Bruce & Rubin, 1984; Rubin & Bruce, in press; Rubin, Bruce & the QUILL Project, 1984).

QUILL is based on a theory of teaching writing often referred to as the "process approach to writing" (Bruce, Collins, Rubin & Gentner, 1982; Collins & Gentner, 1980; Flower & Hayes, 1982; Graves, 1977; Graves, 1983; Scardamalia, 1982). This approach is built around such pedagogical goals as:

- encouraging children to write for specific audiences, especially peers;
- developing revision strategies;
- integrating reading and writing by encouraging children to read and comment on one another's writing; and
- focusing on the content and purpose of writing, rather than mechanical details.

To fulfill these goals, the QUILL Teacher's Guide suggests activities which foster both written and oral communication among students. For example, to encourage writing to personal audiences, the Teacher's Guide includes a

description of Classroom Chat, in which students comment on one another's most pressing problems using pseudonymns. Activities involving the Library include the compilation of a Disease Digest, the production of a class newspaper and the organization of personal portfolios.

Teachers are encouraged to make the development of Planners follow from class brainstorming sessions. A suggestion to develop an Animal Encyclopedia links QUILL to the science curriculum. Teachers learn that using QUILL means more than allowing students to write using a computer; the most robust use of QUILL requires a teacher to depart significantly from the traditional "assign it-grade it" style of writing instruction.

QUILL's importance to this study was as an educational innovation. QUILL makes "demands" on teachers in three independent ways: as a technological innovation, as a innovation in the teaching of writing and as a change in classroom management. The incentives for teachers to take on this three-fold challenge are significant. We hypothesized, for example, that different teachers found in QUILL varying degrees and kinds of intrinsic incentives from the opportunity to develop their careers through learning to use computers to the potential for significantly improving their students' writing.

A host of potential problems also face the QUILL teacher, among them scheduling computer use (there is usually only one computer per classroom), fear of technology, and the difficulty of making significant changes in writing instruction -- all acting as disincentives. The potential rewards are also large -- an increased sense of learning in the classroom, higher student motivation for and achievement in writing, and a heightened feeling of professionalism and effectiveness for the teacher. These complex interactions made QUILL a fertile environment for a study of rewards and incentives.

QUILL is also unusual in its combination of technology with state-of-art pedagogy; studying it differs significantly from studying a more traditional frame-based computer-aided instruction project. In addition, the best use of QUILL in a classroom affects other aspects of the curriculum. The Teacher's Guide includes suggestions for integrating QUILL into science lessons (e.g., preparing Planners for lab reports), social studies (e.g., activities simulating the legislative bill-development process), and reading (e.g., teaching students to be critical readers of one another's compositions).

Finally, QUILL is unusual in that, although it has certain components that are key to its use, it allows a great deal of flexibility for the teacher. In each of the classrooms observed prior to the study, QUILL looked different. One teacher focused on the Mailbag, another on the Library. In one classroom, students always wrote in pairs; in others, most writing was done individually. The amount of time QUILL was used varied from one classroom to another. Thus, QUILL provided us with a unique opportunity to observe an innovation which is partially defined by the teacher, as a reflection of his or her perceptions of the rewards and incentives it offers.

The Role of Incentives and Rewards in the Implementation of QUILL

We conceive of educational change as a multidimensional, dynamic process. Roles and relationships change continuously; different factors change in their importance from one day to the next. Our view of the role of incentives and rewards in this interplay has evolved through the course of the project and can be described best with reference to Figure 1.

This figure illustrates our understanding of how different factors interact in the change process, derived from the literature reviewed earlier, The NETWORK's recent research (Crandall and associates, 1982), and from our experiences with QUILL. As with other classroom innovations, the primary player in the implementation process is the teacher; in the case of QUILL, because of its adaptability, we find a wide range in teachers' implementation, commitment, and the incentives and rewards they experience. The part of this figure that is specific to the teacher, i.e., the factors in boxes, is central.

Beginning at the left, the incentives that motivate teachers to implement may be influenced by the teachers' characteristics (e.g., experience especially with motivational incentives, attitude toward teaching and toward change, teaching style, etc.), by the organizational context (e.g., avenues for professional advancement, emphasis on technology, kinds of students served), and by the kinds and amount of assistance and support available and provided. For example, in the case of QUILL a teacher may be motivated by a personal goal to learn how to use a computer, by inservice credits for attending training, by the provision of a microcomputer for the classroom or by a desire to improve their students' writing.

Individual and organizational disincentives are also present, and can be paralyzing, but we have learned that these can be combatted by timely assistance and support. We know from our research (Loucks & Cox, 1982) and our two years with QUILL, that an advocate or facilitator at the school or district level (e.g., principal, assistant principal, central office staff) can be the source of incentives for teachers (e.g., frequently looking in on classrooms, calling on teachers to conduct training sessions) and can also prevent disincentives from operating (e.g., seeing that machines are fixed, providing release time for training, helping out in the classroom when QUILL is introduced for the first time).

FIGURE 1: INCENTIVES AND REWARDS IN THE IMPLEMENTATION OF QUILL

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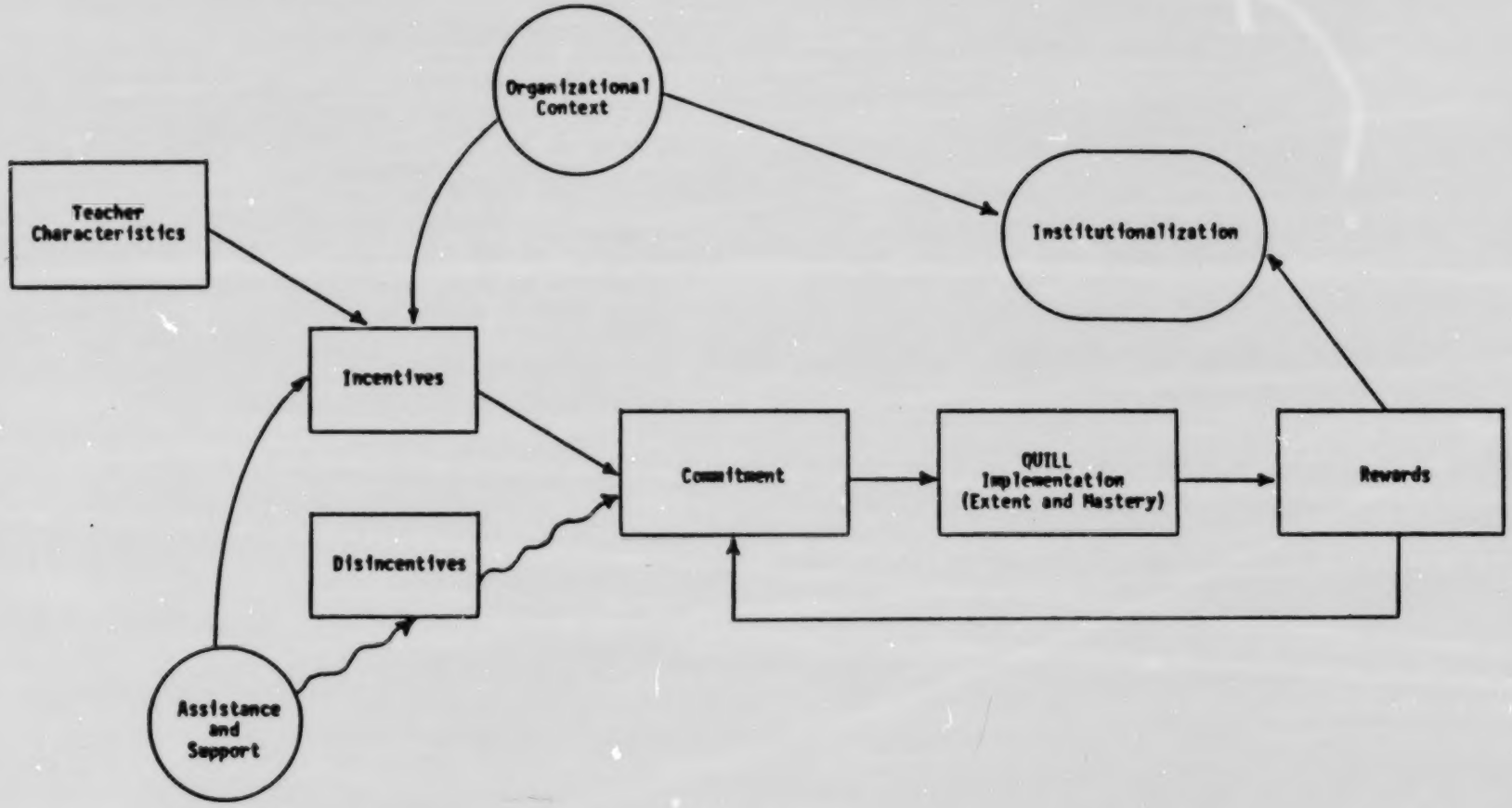


Incentives in turn may influence a teacher's commitment to an innovation; disincentives may undermine commitment. As noted earlier, research shows that teacher commitment is unquestionably a contributor to successful implementation. This was corroborated in our research.

Implementation is a complicated concept, which we view as both the extent of use of each of an innovation's components, and the mastery or quality with which the teacher uses the innovation. (We describe our methodology to measure both extent and mastery in the Plan of Research.) We knew in the case of QUILL that teachers differed greatly in the way they implemented each of its components. Some concentrated on Mailbag; others on the Library. Some had students work in pairs exclusively; others varied grouping strategies. Likewise, teachers' mastery levels varied five months after training. Some teachers still had to read the instructions to "turn on" the system each morning; others had students actively involved in reformulating how every component of QUILL could be used.

Rewards come as the result of implementaton. As noted earlier, a wide range of rewards are possible, and we have observed a large variety with QUILL. Some teachers found student writing greatly improved; others were seen as "technology experts" in their districts; and others experienced a more flexible, open classroom environment where the opportunities for and instances of learning seemed to increase.

Rewards can also cycle back to build commitment (Huberman & Miles, 1982). One QUILL teacher stated at the beginning of the year that she thought QUILL was a bad idea; she said she "wanted to throw the computer out the window for the first two weeks" she had it. But her students thrived on QUILL: in spite of

her attitude they were excited about it, wanted to work with it, and she could see clear improvements in their writing which she attributed directly to the QUILL program. Now this teacher would fight to keep QUILL in her curriculum. The rewards of seeing her students' excitement and accomplishments built up her commitment to the program and her greater commitment led to a more "robust" and imaginative implementation of QUILL as well.

One more loop needs to be explored. We built institutionalization into the model because of our view that innovations tend to stand or fall according to how deeply they are woven into the fabric of the school district (Loucks et al., 1982). Research tells us that it is possible to implement an innovation without its becoming institutionalized, in which case it is doomed to disappear (Berman & McLaughlin, 1978; Huberman & Miles, 1982). The reverse can also occur; sometimes structures are in place at the district or school level to carry on the new practice, but nothing is going on in classrooms (Huberman & Miles, 1982). Occasionally, a few teachers will be committed to using QUILL and will carry out robust implementations -- without administrative support or the hope of institutionalization. We found examples of all of these situations in our case studies.

Institutionalization is not well understood, but we believe we have developed some insights into how it develops, what causes it to happen, and why it gets unhooked from implementation. These questions are relevant to this study because our experience with QUILL suggests that rewards felt by teachers often significantly influence a school or district's decision to institutionalize a practice. In one QUILL district, the positive experience of two teachers led to training all district teachers on one grade level, the purchase of a microcomputer for each teacher, and the designation of extra assistance at

each school to support and maintain the use of QUILL. We also suspect that the organizational context influences institutionalization through such factors as community pressure to use technology, slack resources to buy materials or equipment, and inclinations of district staff towards certain instructional approaches.

This conceptualization both guided and was revised in light of our case studies. Because we were able to study a small number of classrooms in detail, we could dwell on similarities and differences among individual teachers. We were able to describe what "implementation" meant for each of the teachers and how their particular implementations have led to different rewards. We were able to examine in depth the interactions of multiple factors on teachers' commitment. While we viewed the teacher within the school, the district, and the community, we concentrated on understanding his or her motives, attitudes, and use of QUILL in the classroom. We believe we have helped to clarify some of the issues around incentives and rewards which the current literature leaves murky.

Research Design

Research Questions

The primary research question this study addressed was: What is the role of incentives and rewards in the implementation of a technological innovation?

To answer this, the following questions were considered:

1. What incentives and rewards (intrinsic, extrinsic, individual, group, organizational) are promised and/or anticipated at the beginning of implementation?

2. How, why and under what conditions are incentives and rewards modified over time?

3. What is the influence of different incentives and rewards on teachers' extent of implementation of QUILL?

4. How do other factors interact with incentives and rewards to influence teachers' extent of implementation? Factors include:

   a. Teachers' prior experience with microcomputers and a process approach to writing (e.g., Do different incentives work with and different rewards result from different levels of experience?)

   b. Kinds of administrative support and assistance (e.g. Do different incentives work with and different rewards result from different kinds of administrative support and assistance?)

   c. Teacher characteristics (e.g., commitment, sense of efficacy, energy level, style of interaction with students)

   d. School and teaching context (e.g., types and numbers of students, staff collegiality, amount of structure imposed at building and district levels). This category includes <u>disincentives</u> which result from school and teaching context also (e.g., teachers overloaded with curriculum demands, no release time available for QUILL training, no other teachers using QUILL to provide support).

5. How does a teacher's implementation of QUILL affect, in turn, the rewards and incentives it offers? How do students' reactions to QUILL provide rewards and incentives for teachers?

6. What is the influence of incentives and rewards on the degree to which QUILL is institutionalized? Do these incentives and rewards act on groups other than teachers (e.g., building and district administrators)?

Research Design Overview

To examine these questions, the study involved two major phases of work conducted over an 18 month period: (1) Case Studies and (2) Cross Site Analysis.

Case Studies. Ten classroom teachers, two in each of three schools in three separate school districts, and four in two schools within a single district, were selected to participate in the study. Sites were chosen so that the set showed diversity on these variables:

community type (urban, rural, suburban)
degree of district commitment and support
level of schooling (elementary, middle)
experience teaching writing as a process
existence of in-school consultant
experience with computers
location of computer (in classroom, in computer lab)
geographic location in U.S.
experience with QUILL

The first nine months of the study focused on the collection of data in these ten classrooms (and in the schools and districts in which they are located) in order to develop in-depth case studies of the implementation and institutionalization of QUILL.

An Issues Guide outlining areas of interest to the investigation was developed and revised with the Project Officer's comments (see Appendix B). From the Issues Guide, protocols for interviews and observations were developed for use with teachers, principals, central office support staff, and others involved with QUILL (see Appendix B). Finally, the QUILL Component Checklist was revised to record descriptions of the teacher's current implementation of QUILL and past use of QUILL components (again, see Apendix B).

Three three-day site visits were made to each school during the first nine month period. One visit was scheduled near the beginning of the implementation process to capture the context in which QUILL was implemented and to supplement the baseline data. The latter two visits were scheduled for the middle and near the end of the school year. Principals, central office staff, and others involved in the implementation effort were interviewed along with the teachers actually using QUILL.

Additional information concerning the implementation of QUILL in each of the classrooms was available at no cost since NETWORK and BBN staff were in continual contact with many of the teachers as a result of the training being provided to their dissemination sites. This information was used to supplement the data obtained during the nine days of data collection.

An assessment of implementation was made during each site visit for each teacher using a specially designed QUILL Component Checklist. Institutionalization indicators were also assessed, using a checklist procedure with administrators. (See Appendix B for both of the above.)

Cross-Site Analysis. The second nine months of the study focused on developing and refining the case studies in more detail; analyzing the data for each; conducting extensive cross-site analysis; preparing short directed vignettes in other sites to explore questions raised by our data; preparing the final report, articles, and presentations; and otherwise disseminating findings.

Sample

Case study classrooms for this study were selected from ten sites chosen for dissemination of the QUILL program, the third year activity of a contract with the Education Department's Libraries and Learning Technology Program through which The NETWORK and BBN had developed and pilot tested QUILL writing activities. We worked in four districts, choosing two classrooms in each of three schools in three districts, and four classrooms in two schools within a single district. Two of the schools (one teacher in each) had been involved in the pilot test; they were in their second year of QUILL. The sample of schools varied according to the demographics of the student population, including ethnicity, SES and designation of community as urban/rural/suburban. The teachers varied on two factors:

1. technological readiness -- the amount of knowledge about, experience with, and use of microcomputers in classroom instruction, and
2. approach to writing instruction -- the degree to which the teacher emphasized writing in his/her curriculum, and incorporated strategies of a "process approach" to writing [e.g., writing in phases (prewriting, writing, revising), individual conferences, students writing for real and varied audiences, writing in different genres].

We decided to select more than one teacher per school because of our interest in the variation of teacher responses in the same context. We included "veteran" QUILL teachers so we could look at how the roles of incentives and rewards change with time, a phenomenon we had noticed in the past, and which the literature emphasizes as well (Huberman & Miles, 1982; Pincus, 1974).

The following schools/districts were chosen as case study sites:

- Heath Elementary School/Seaburg: a medium sized school in a large urban district with a mixed population.
- Martin Luther King Middle School/Adams: an inner city school in a medium sized district, with a low-income, virtually all-Black enrollment.

- Mountain Junior High/Countryville: a relatively small, isolated rural district with an all-white population.
- F.D.R. and Van Ness Elementary Schools/Beechwood/Rowley: a two-town district, one upper middle class and professional; the other working class, with a large first generation Italian subpopulation.

Each school and district that had been selected for dissemination of the QUILL program (this included schools in 20 districts) had been asked for a signed agreement to be involved in case study research, in case we selected their site for study. Our experience in our five pilot schools had been that teachers and principals welcomed our observations, which we made more frequently than planned because of our great interest in learning about QUILL in the classroom. Our case study visits for the current study were in general no exception; teachers and administrators mostly appreciated our attention.

Our Approach to Case Studies

Although they have been used for many years in a variety of fields, case studies and the methodology for their development have received a great deal of attention recently (Herriott & Firestone, 1983). Methodologies range from broadly conceived and "emergent" (Dobbert, 1982), precise and narrowly focused (Yin, 1982), to highly elaborate and detailed (Miles & Huberman, 1983). We chose to take a middle ground. The conceptualization explained in the first part of the proposal suggested some broad areas which might be related in our exploration of the role of incentives and rewards in implementation.

Because these relationships were still unclear at the start of the project, as were the specific variables within each area that are most salient in the process, we could not be entirely precise and explicit about what we wanted to look at. On the other hand, we understood a great deal about what happens in implementation already, so we could narrow our field of vision considerably.

Therefore, we approached case studies with areas of interest (e.g., teacher characteristics, organizational context) in mind, which we could be fairly confident would be important. In addition, we were open to adding new areas, should they appear in the course of our work. Within the areas, we listed variables that we believed to be key (e.g., in the area of teacher characteristics, we were sure to explore the approach to writing instruction), but we were looking for those that seemed to be most salient in our case study sites. These may or may not have been on our list.

To guide our case study visits, we developed an Issues Guide (see Appendix B). This guide served as the general map of factors that were to be addressed. Topics on the list included:

- Teacher characteristics: experiences, attitudes, commitment, teaching style
- Organizational context: school and district norms with respect to innovative activity; climate (e.g., cohesiveness, communication, procedures for decision-making and problem-solving); collegiality of staff
- Assistance and support: principal's attitude and involvement; assistance from building and district level; district level involvement
- Rewards, incentives and disincentives: extrinsic and intrinisic; individual, group and organizational; planned and unplanned; explicit and implicit
- Classroom use of QUILL: implementation of QUILL components; use in different content areas; student autonomy; teacher mastery.

The initial list of topics was generated by project staff, but was expanded as we collected data from site visits, phone conversations, observations, feedback from project participants, and so forth. The guide was used to structure interviews with teachers and other key personnel (see examples in Appendix B). The value of beginning with the guide rather than with a set of interviews and observation forms, was that it helped us integrate all the

information about a single topic or issue in one place regardless of the information source.

Topics from Issues Guide guided our site visits, and the development of the case studies and cross-case analysis. Once the case studies were completed and cross-case analysis underway, we used the Issues Guide to identify areas in which our data was thin. In order to do a thorough cross-case analysis we supplemented case study data with short vignettes about QUILL teachers from other QUILL sites, selected because they embodied a constellation of implementation variables not represented in the four case-study sites. These new teachers were interviewed specifically to fill in and round out our case study data, and enable us to speak with confidence about the patterns we believed we had discovered.

Data Collection

Data were collected through a series of observations, interviews, and document reviews. For the independent variables of rewards and incentives, support and assistance activities, organizational context, disincentives, and teacher experience, we used a combination of semi-structured observations and interviews. To assess implementation and institutionalization we used structured instruments, since we had defined both explicity ahead of time, and wanted to know the extent to which each was occurring. Here we turn to discussions of those instruments.

Assessing Implementation. We measured implementation of QUILL in two ways. The first was to measure extent of implementation using a Component Checklist (Loucks & Crandall, 1982). The methodology for design and use of the

Component Checklist was developed in 1978 through a collaborative effort of The NETWORK, Inc. and the Texas R&D Center for Teacher Education, and was used to assess the implementation of 61 innovations in nearly 400 classrooms in the Study of Dissemination Efforts Supporting School Improvement (Crandall et al., 1982).

The final version of our QUILL Component Checklist, in the form of a Practice Profile, is included in Appendix B. It operationally defines the key components of the QUILL program, describing how each component might vary in a classroom setting. QUILL staff designated which variations are the most ideal, which are acceptable, and which constitute unacceptable uses of QUILL.

Component Checklists were used to assess a number of different variables. Using a focused interview format, a researcher learned from a teacher what components, if any, were in place before the adoption of QUILL, and how they were being used. This provided "pre" data, indicating how much change the teacher needed to undergo to ideally implement QUILL. Then the researcher completed a checklist on a teacher's current use of QUILL. Comparing "pre" data with current data told us how much change had occurred in the teacher's practice. Finally, comparing current use of QUILL with ideal use (defined by the developer) provided a measure of fidelity -- how close the teacher was to how QUILL really should be used.

We used the QUILL Checklist to assess each teacher's implementation of QUILL at the time of each of our visits. We also used it to depict each teacher's past use of QUILL components.

Our second indicator of implementation was an assessment of the teacher's Level of Use of QUILL. An indication of the teacher's mastery of or sophistication in use of an innovation, Levels of Use describe a sequence of behaviors that individuals exhibit as they adopt and then implement a new practice (Hall, Loucks, Rutherford, & Newlove, 1975; Hall & Loucks, 1977). The eight levels, defined briefly in Figure 2, helped us describe whether or not the teacher was using QUILL, how comfortable he or she was with it, and the extent to which that use was sensitive to needs of students. Levels of Use were measured using a focused interview format (Loucks, Newlove & Hall, 1976), which was imbedded into our teacher interviews during each site visit.

Figure 2:

Levels of Use of the Innovation:
Typical Behaviors

Leve of Use		Behavioral Indices of Level
VI	Renewal	The user is seeking more effective alternatives to the established use of the innovation.
V	Integration	The user is making deliberate efforts to coordinate with others in using the innovation.
IVB	Refinement	The user is making changes to increase outcomes.
IVA	Routine	The user is making few or no changes and has an established pattern of use.
III	Mechanical Use	The user is using the innovation in a poorly coordinated manner and is making user-oriented changes.
II	Preparation	The user is preparing to use the innovation.
I	Orientation	The user is seeking out information about the innovation.
0	Nonuse	No action is being taken with respect to the innovation.

From: Hall, Loucks, Rutherford, & Newlove, 1975.

Assessing Institutionalization. Institutionalization is an organizational phenomenon, since it is defined as the extent to which structural features are built into a system such that an innovation would continue to be supported. The following list of such features was adapted from Yin (1978) for use in the Study of Dissemination Efforts Supporting School Improvement (Loucks et al., 1982):

1. New staff receive training and orientation in QUILL.
2. Training programs or inservice activities for current staff are held to maintain the use of QUILL.
3. QUILL is formally incorporated into the curriculum plans.
4. There are written guidelines for the use of materials and methods for QUILL.
5. New materials and supplies are purchased in order to maintain the use of QUILL.
6. Staff have specific responsibility for monitoring QUILL programs and results.
7. The budget includes a separate line item to support use of QUILL.

Our case studies began shortly after most of our teachers were trained to use QUILL. We did not, therefore, expect many of these indicators to be present at the start of the study. However, since we included a school and two teachers from the previous year's pilot test in our sample, we anticipated that more of the indicators would be found in place at that site (one of the reasons we included these teachers). In all cases, we talked with building and district administrators each time we made site visits so we could document when and if, and especially why, each feature was incorporated. This gave us an indication of QUILL's degree of implementation.

Site Visits

Data collection at our sites was guided by the topics in our Issues Guide, with information coming from a number of sources. Before each site visit, we reviewed any printed material that was relevant to the case studies. This included district and school policies and procedures regarding innovation and technology; curriculum guides, handbooks and materials for writing and computers; memos to and between teachers and principals regarding QUILL; and agreements with teachers' organizations (to ascertain any extrinsic reward structures).

Our experience with case studies in numerous settings indicated that we could greatly benefit from unstructured time spent in classroom and school settings, since it would allow us to develop rapport with teachers and principals, and show them we were truly interested in what they were doing. Therefore, our site visits were not tightly scheduled with formal interviews, but rather allowed for much observation and informal time with a variety of district people.

Each site visit began with classroom observations, including informal conversations with the teachers. We observed QUILL in use, classroom organization, writing instruction, classroom arrangement, any display of work, and especially, teacher-student and student-student interactions. After classroom observations, we had a formal interview with each teacher. For these interviews we used a loosely structured topic outline adapted from the Issues Quide, rather than a rigid interview schedule (see Appendix B). Again, we were interested in the topics that emerged from the conversation as much as

those listed in the Issues Guide. We also used this time to ask about classroom activities we observed earlier (e.g., for teacher intent, perception of results, etc.).

During the time at the school, we spent approximately 45 minutes interviewing the principal and any other staff members who had support roles with QUILL (e.g., assistant principal for curriculum, language arts resource teacher). We used the same loose outline for these interviews as well. They helped us understand the leadership, support, and assistance available at the school level, as well as the perceptions, attitudes, and style of administrators that may influence teacher motivation and rewards. We also spent time in the teachers' lounge, listening and having casual conversations with other teachers. This gave us a sense of the climate of the school and collegiality of the staff. Before leaving the school, we briefly scanned some of the writing of students in the classrooms using QUILL.

During the site visit we also conducted formal interviews with district level staff with responsibilities in areas related to QUILL (e.g., writing, technology, implementation, staff development). This helped us understand district policies, procedures, curriculum, support functions, and the incentive structures that were in place; it also allowed us to assess institutionalization.

Between site visits, researchers called teachers and school principals approximately once a month, for informal updates on experiences and concerns. One project staff member had responsibility for developing case studies of each school site and its two teachers. In order to separate the roles of trainer and researcher, the four staff members -- Loucks, Zacchei (later

replaced by French), Rubin, and Starr -- were not the same ones who were responsible for training and follow-up at that site. However, case study researchers were in contact with QUILL trainers for their sites. This provided one more source of data, enriching our understanding of what occurred as QUILL was implemented.

Data Analysis

Coding. Data were collected in the form of field notes and taped interviews. Immediately after site visits, researchers transcribed field notes and listened to the tapes, organizing information according to topics in the Issues Guide (methodology taken from Miles and Huberman, 1984). To facilitate this process, a coding scheme was developed, with reference to the Issues Guide. Data codes were formulated to identify information in the areas of Individual Characteristics (of teachers, building administrators, district administrators, etc.), Organizational Context, Implementation Process, Assistance, Outcomes (of implementation) Innovation Characteristics and Coordination (of efforts among different people involved in QUILL implementation). (See Appendix B.) Interviews were coded according to this scheme so that information on specific topics could be pulled from the data and considered separately.

The Issues Guide was revised as the research progressed, so that new areas of emerging importance were sure to be included in subsequent site visits. Organizing notes from each site visit around issue areas greatly facilitated later development of full case studies.

Case Study Analysis

Each project staff member was responsible for writing a 20-30 page case study of a school and the two teachers implementing QUILL there. To better understand the causal relationships between component factors in each case and to facilitate cross-site and cross-teacher analysis, project staff created a causal network analysis for each implementing teacher. These used the initial conceptual framework, discussed earlier in this report, as a starting point: they identified the organizational context and individual characteristics of each teacher, then traced his/her implementation efforts through several stages, identifying instances of support and assistance (or lack thereof), incentives to continue, disincentives, changes in teacher practice throughout the process, rewards, and the effects of rewards on subsequent practice.

Staff met regularly during this period to discuss the charts and revise the causal connections they outlined. It was during this period that a secondary implementation phase was added to the scheme, as patterns began to emerge suggesting which factors might be crucial to the successful implementation of QUILL. To test our hypotheses we conducted interviews with additional QUILL teachers from different sites at this time, and wrote up vignettes of different implementation scenarios to supplement the major case-study descriptions.

The sites for vignettes were chosen because they illustrated configurations of the factors we believed affected implementation which were not represented in the original case study sites. The case studies themelves were developed over several weeks according to a common outline derived from the Issues Guide, and drafts of the studies were discussed and critiqued during staff meetings.

Thus, while case study development proceeded, cross-case analysis began. Staff members compared the case studies section by section, then pooled observations regarding the variables which appeared to influence implementation and institutionalization. Information from supplementary interviews and the network analyses added to our understanding of these key variables, and suggested some causal relationships involving incentives and rewards which clearly affected implementation efforts. Through these meetings and discussions we developed a "thick" list of issues relating to implementation, incentives and rewards to be discussed in depth in the cross-case analysis.

Findings

Case Study Sites

In this section we provide a brief synopsis of each case study and vignette site. The four case study sites were chosen in part for their collective geographic and demographic diversity. Vignettes represent site characteristics not found in the case studies. Full case study and vignettes are included in Appendix A.

Martin Luther King Middle School. Martin Luther King represented a medium sized Northeastern urban district, a city with an aging population, declining school enrollments, and an unstable school budget. The district is comprised of 75% minorities: mostly Blacks and Hispanics.

Our case study site was a middle school of 800 students, 99% Black, and 67% classified as "low-income." The building was a hugh modern concrete structure with few windows, designed with open space instruction areas holding four

classrooms of students. The middle school was on the upswing from years of low student achievement. The principal was energetic and progressive and determined to turn that situation around. He had put a major emphasis on improving academic achievement (as reflected in the school's achievement test scores), on upholding behavioral standards and accountability, and on teaching students responsibility. The staff supported these new initiatives and reports were that the school had changed for the better since the principal had arrived the year before.

The QUILL project was first promoted in the district by ECS, an intermediate agency providing staff development opportunities to several towns and cities in the area. The district Language Arts Coordinator chose Martin Luther King (MLK) for implementation in her district in part because of the principal's enthusiasm for innovation and his interest in improving writing in his school. She became the local contact for the QUILL project; given her district-wide responsibilities, however, she found it impossible to visit the school to provide any ongoing support. Neither she nor the ECS representative provided any significant support once the program was set up in the school.

The organization of QUILL at MLK was somewhat different than at the other case study sites. All microcomputers in the school were housed in a computer lab, and students from the two classrooms were sent to the lab to work on QUILL there. The computer lab teacher was to help them complete the assignments that their own teachers had given them to work on. This proved to be difficult to coordinate, since the teachers could not work directly with their students on QUILL, and the lab teacher was not prepared to provide guidance for writing.

His interest was in teaching computer literacy, which is what he tended to focus on when students came to the lab without clear assignments (which was often). Moreover, communication between the lab teacher and the two teachers chosen to implement QUILL was poor -- their schedules did not coincide and they were never able to get together to discuss or plan for QUILL use.

The teachers who piloted QUILL at MLK were chosen by the principal for their progressive and professional attitudes, and because he saw them as leaders who could promote QUILL to become a larger program in his school. Frank Cooper was an accomplished young teacher with excellent professional qualifications, a background in process writing, and a real love of language. He was not assigned to teach writing that year however; he sent students to the computer lab from his combined 7th and 8th grade reading class.

He developed several QUILL assignments at the beginning of the year and set up a system of rotation for sending his students in pairs to the lab. As the year progressed this system broke down, however. Students went to the lab in no particular pattern, and usually had no assignment. While he recognized QUILL's potential for promoting writing instruction, at the end of the year he gave four reasons to explain his low level of implementation:

- the students' time with QUILL was too limited -- even when his rotation system worked, students only got onto the computer once every two or thre weeks;
- he was separated from his students while they were working on QUILL and could not provide any input into the writing lessons at all;
- he had no contact with the other QUILL teacher or computer teacher;
- QUILL was not a school priority: it was difficult to give it the time it needed when he was required to concentrate on increasing achievement scores in reading and mathematics.

Paula Decker was a 6th grade teacher with 17 years of teaching experience and a loosely structured teaching style. She was interested in seeing how computers could be incorporated into classroom instruction. She sent her students to the lab more regularly than Frank and gave out more specific assignments, especially at the beginning of the year; however, she provided little feedback on the writing students produced, believing they had all the skills they needed to evaluate their own writing.

Eventually her assignments decreased as well, so that by the end of the year the lab teacher was making up his own assignments for the QUILL students, which did not necessarily even relate to the QUILL program. Paula also noted that there was not enough time to devote to QUILL; she agreed that having so little access to the computers diluted QUILL's use and usefulness for her.

The lab teacher, Paul Anthony, while his position was supposed to be that of a support person, in fact took the only attentive instructional role. He liked QUILL but did not think it was being used well, nor did he think it was his responsibility to plan writing assignments for the other teachers.

All the teachers involved with QUILL were interested, although somewhat skeptical, from the beginning. The incentives at work for them varied -- from wanting to stay current in the field (Paula Decker), to wanting to explore the implications of computers for writing (Frank Cooper and Paul Anthony), to not wanting to say no to the principal (all). The lack of appropriate organizational arrangements (i.e., poor computer location and no time for meeting), the absence of principal or central office assistance, support and/or pressure, and the competing goals of the school made it no surprise when at the end of the year there was little indication that QUILL would be institutionalized at Martin Luther King.

Heath Elementary School

The Heath Elementary School represents a large urban district where building level administrators are quite removed from the district administration. Heath got involved in the QUILL project through the initiative of a few teachers and parents who were interested in getting computers into the school. They sent a proposal to the district for funds to set up a computer lab and purchase three sets of the hardware needed for QUILL. Once the money was allocated the district had nothing more to do with the QUILL project.

The principal at Heath had little interest in microcomputers; while he did not block the proposal he was not committed to the implementation or success of either the computer lab or QUILL. His main concern was with raising the school's math and reading scores. It was one of the teachers involved with writing the original proposal who ordered the equipment and set up the computer lab when it arrived.

The two teachers who piloted QUILL were provided with release time for an initial training; beyond this they received little assistance or support in their use of the program. The local facilitator was a woman with computer knowledge and experience but she was not a teacher; in fact, she was the parent of a student in one of the QUILL classrooms. This relationship made her relationship with the teachers awkward; she could not really assume classroom or curriculum expertise even if she had it. Even at the level of mechanical advice she was not particularly useful as she was not at the school often and was difficult to reach. There was little communication between her and the two QUILL teachers.

Mary Keith was a third grade teacher with 21 years of teaching experience behind her. She had been part of the group which wrote the original proposal for computer funds; her primary incentive then and with the QUILL project was to become certified as a computer teacher for the district. She had little experience or interest in process writing before her involvement in QUILL. Rather, she emphasized basic skills in her teaching, in line with the school's priorities. She had taken a few courses on computers but was not particularly comfortable with the QUILL hardware, even after the initial training. More interested in LOGO than QUILL, she thought the former was a better use of computers in the classroom. She saw QUILL essentially as a vehicle for promoting computer literacy in the school. Her commitment to the writing program was minimal.

Without any support or encouragement from the principal, the local facilitator, or the other QUILL teacher (who was occupied with his own problems), the level of QUILL implementation in Mrs. Keith's classroom was low. She had not learned the program well enough at the training to pass it on adequately to her students, and she never took the time to learn it better. She introduced QUILL slowly, with long gaps between use, and never taught the word processing commands at all. There were few rewards for her during this time. It was frustrating for her to use QUILL, and though her students liked QUILL they never learned the program well enough to be able to work without assistance. She never sought help from anyone about QUILL, and her use of the program declined over the course of the year until it stopped altogether. Her writing instruction was unaffected by her minimal use of the program.

The other QUILL teacher, Frank Bilder, was one of the primary instigators of the school's computer program: it was he who had ordered the equipment and set up the lab at Heath. He was the computer coordinator for the building, and considered himself responsible for both the QUILL project and the computer lab. He had a vision of greater QUILL use, and hoped to expand the program beyond the two classrooms the next year.

With his strong commitment to QUILL and a flexible classroom management style, Frank's initial level of implementation was high. He worked out his management problems early, arranging it so that each student got onto the microcomputer at least twice a week for 20 minutes. Pairs of students worked at the computer throughout the day. He used Mailbag and assigned writing projects in content areas. His students became facile at the keyboard with regular use; they were enthused about QUILL and about writing itself.

In December Frank was transferred from his fourth grade class to a fifth grade room to replace a teacher who had become ill. He took the computer with him and started in on QUILL with this class. It took longer to introduce this time, given the disruption of his arrival, but by February this class had already written many messages in Mailbag and was preparing to do its science reports on QUILL.

Frank had placed some emphasis on writing prior to this project, but he did modify his method somewhat after being introduced to QUILL. His "process" approach consisted essentially of breaking down writing into three stages -- pre-writing, writing, and revising -- and he did not like revising much either. But he did do pre-writing exercises, had students edit each others' work, and tried to incorporate QUILL into other subject areas as well.

Another promising beginning was cut short when Frank became ill himself, and the class was taken over by a series of substitutes. They tried to keep QUILL going but were forced to concentrate primarily on discipline. Since Frank never returned to school that year QUILL was essentially left hanging.

Needless to say, no institutionalization of the program took place at the Heath School. Neither class was using QUILL at the end of the year, and nobody seemed concerned about this. No one in the district was tracking the program, the principal had little interest in it, and QUILL's one champion at Heath, Frank Bilder, eventually died of the illness that had taken him out of school. Moreover, that spring the district decided to install IBM PCs throughout the school system. In spite of the fact that Heath's entire computer program was built on Apples, it was refocussing on programs it could use with its new equipment.

Mountain Junior High

Mountain represents a rural district with a small population, isolated from any urban center. In spite of its small size and remoteness it aspired to become a model school district, and many of its administrators were in the middle of doctoral programs in education at the state university.

At the time we were there the district was going through some upheaval, with a new superintendent and some significant budget cuts. Microcomputers had survived as a high priority item in the face of budget reduction however, and the district had recently created the position of computer coordinator. The woman who held this position saw her job as that of helping the district to purchase hardware rationally and economically; she was not involved in the

computer curriculum development that had taken place the summer before we arrived. The district had a fully specified language arts curriculum with lots of detail about writing, although most of it was mechanically oriented. There was not a lot of building level support for the writing program.

The district was developing a microcomputer curriculum in both computer literacy and content areas. The district curriculum supervisor was too busy to be involved with this; she left it to the computer coordinator. Since the computer coordinator did not see this as her specific responsibility, nobody acted as overseer for this task. In general, computers had not found a happy home in the curriculum at Mountain: they were generally perceived as extras and a burden on top of the other curriculum requirements.

The principal at Mountain knew little about microcomputers. He was mainly trying not to make any mistakes in the decisions he was called upon to make with regard to them. The computers were housed in a section of the library which was staffed by parent volunteers. QUILL computers were signed out each day by the QUILL teachers.

This was one site where the teachers were trained by someone other than a QUILL developer. The local trainer was supposed to serve as a local facilitator, but his visits were delayed so long by the lack of equipment that he never offered the teachers much assistance. The computer coordinator was also supposed to be a facilitator, but she saw herself more as a mechanical problem solver, although she said her expertise was not in the area of hardware. Other than the two teachers, nobody else in the district knew very much about QUILL.

Tom Heart was a veteran teacher, uncommonly committed to his job. He was active in the local teacher's union and had served as its president for several years. He got involved in QUILL because of his curiosity about computers. He had one at home and had done a lot of thinking about the role of microcomputers in education. He jumped at the opportunity to pilot QUILL without knowing much about the program itself.

Tom spent a lot of time on writing. He had five periods of English classes a week; half of them he spent actually writing and half on district-mandated mechanics drills. Tom gave a writing assignment each Monday. He had his class brainstorm on a writing topic, then everybody would compose for awhile, including himself. The students did revision in pairs, reading aloud to their partners, correcting their errors, then copying the pieces over. The whole process took a week, and Tom went over each students' piece at some point during that time. Students had the opportunity to read their work aloud and put it up on the bulletin board. The writing assignments were creative and humorous, though Tom assigned very little writing in other subject areas than English.

Tom was strongly committed to QUILL from the beginning and thought a lot about how to incorporate it into his classroom routines, but he was frustrated for a long time with mechanical and logistical problems. He found that the district did not have the proper hardware at the beginning of school and it took two months before all the equipment problems were solved. No one in the district seemed to be monitoring the project enough to note these problems, so he did not start to use QUILL until the beginning of April. He also had a real time problem: he did not have his QUILL students for long enough during the day to get them all on the computer often enough, and he felt squeezed by the district's many curriculum demands.

The experience was positive overall: he worked out a reasonable use schedule and was rewarded by his students' enthusiasm, and became interested in creating a position of computer resource person which he hoped to fill. But his frustrations were significant. He was planning to teach a self-contained third grade class the next year and hoped that some of the problems would disappear in a class that was together more during the day.

Robert King, a sixth grade teacher who had been in the district eight years, was himself a novelist. He had a special interest in writing and a prior appreciation of the power of word processing. He got himself into QUILL without really knowing what he was doing, though; he thought he was just expressing interest but he turned out to be committing himself to piloting the program.

Robert gave his class one writing assignment a week. He brainstormed with the class and had them do some prewriting, then they had three sessions to finish their piece: one to draft, one to edit with a partner, and one to rewrite. He gave more expository exercises than creative ones. He looked for real contexts and different audiences, different points of view, and gave writing in other content areas.

Robert took a wait-and-see attitude toward QUILL in the beginning. He progressed slowly because of the equipment problems at the beginning of the year, but was very enthusiastic by the end, and looked forward to the next year when his students would have more time to become proficient at QUILL. He felt that QUILL backed up the kind of writing he was doing already and the lack of support did not bother him: he was not the kind of person who asked for help.

There was no evidence that institutionalization of QUILL was likely to occur in Countryville, however. Any initiative for expanding the program would have to come from the two teachers, as no one else in the district was taking steps to make it happen. At the end of the year the computer coordinator was considering buying a word processing program for the whole school to use. While she was willing to consider QUILL as a possibility, she has no special leaning toward it. She was clearly thinking about QUILL in terms of a word processing rather than a writing program. In general, consideration of the role of computers in the district was separate from curriculum planning; no single planner could put together QUILL's computer and writing aspects in conceptualizing its place in the language arts curriculum.

Beechwood/Rowley

The Beechwood/Rowley district is comprised of two townships, one upper-middle class and one lower-middle and working class, with a large subpopulation of first-generation Italian immigrants. It is a suburban district just outside the metropolitan area of a major east coast city. There are 6,000 students in the district, a figure which had been dropping for twenty years but now seems to have stabalized.

The district had been involved with a nationally-validated and disseminated writing project, and already had a strong process-oriented writing program in place before QUILL arrived. The director of this program, the district Curriculum Coordinator for Language Arts, was an active and outspoken advocate for her programs. She had established the position of Curriculum Resource Specialist (CRS) in each building in the district to help implement the programs her office developed. This woman, Maureen Price, oversaw the QUILL

program as a whole in the district; the CRS' provided both programmatic and mechanical assistance to QUILL teachers at the building level. In no other district in the study was there an institutionalized support system as extensive as the one in Beechwood/Rowley.

We visited four teachers in this district: two who had piloted QUILL the year before and were in their second year of QUILL use, and two who were starting into their first year of QUILL along with all the other fourth and fifth grade teachers in the district. Beechwood/Rowley was the one district in the study where institutionalization of the QUILL program had already occurred. We were comparing, among other things, the difference in implementation between those teachers who had introduced QUILL in a pilot test and those who were introducing it as part of a district-wide curriculum change.

In the pilot year QUILL training involved the two teachers, the CRS' from their buildings, and the district Curriculum Coordinator. In the second year Maureen Price ran the training herself, with assistance from the pilot teachers and the CRS. In general, the two pilot teachers served as additional resource people for all the other fourth and fifth grade teachers implementing QUILL for the first time that year.

The first year teachers were chosen by their principals for participation in the pilot project because they were seen as energetic, flexible, and innovative: likely to do well with QUILL. Neither had had any experience with microcomputers before this. Both were excited about the project, pleased to be asked, but quite apprehensive about the new technology. They got a lot of support fom their CRS', who helped them introduce the program to their classes, develop Planners, and work out the word processing commands. By

mid-year both had worked out their classroom routines, were using QUILL regularly, and enjoying it. Their implementation was fairly rigorous and "by the book". Both were excited by the improvement they saw in their students' writing, felt rewarded by the interest and enthusiasm the kids exhibited, and felt a new, more knowledgeable commitment to QUILL.

Later in the year they were asked to give an inservice to all the teachers in the district on QUILL use, and accepted some invitations to talk about their use of QUILL around the state. This experience was an eye-opening one for them: it gave them a new perspective on their jobs and their professional possibliities.

In their second year, the pilot teachers consolidated the gains of their first year. They got much less assistance from the CRS' but were more self-confident and did fine with less. The more creative of the two became more relaxed and spontaneous in her use of QUILL: she had the computer on through more of the day, used it in different subject areas, and made up new assignments of her own to do with QUILL. The other teacher's use of QUILL changed little in the second year -- she improved the assignments she had the year before and devised some new ways of introducing QUILL to what she characterized as "a slower class than last year's."

The teachers who were starting QUILL for the first time that year got less individual attention from their CRS' (who were responsible for helping all fourth and fifth grade teachers beginning QUILL) but more generalized support from their colleagues, who were going through the same experience themselves. Also, they had not been chosen for their "likeliness to succeed" with QUILL; while both did well with the program their commitment to the project was lower

than the two pilot teachers' the year before. One teacher, Lily Porcello, said flat out she thought the fourth grade was the wrong time to introduce QUILL to kids. She was not happy about using QUILL at all; she said, "I wanted to throw the computer out the window for the first two weeks." Ironically she became one of QUILL's staunchest advocates. By following QUILL programs her teaching techiques changed in important ways. Moreover, through Mailbag her class wrote successive letters to their principal, congressman, and ultimately the President; these letters resulted in a trip to Washington, D.C., much excitement, learning, and fame. Lily was rewarded by her students' writing improvement and by the excitement QUILL brought to learning in her classroom.

Janet Vandermeer, on the other hand, understood and agreed with the QUILL program from the beginning; in fact, she had independently suggested that word processors be used to help to teach writing to her principal the year before. Possibly because she was familiar with the ideas and techniques QUILL employs, she did not concentrate on QUILL as much as some of the other implementing teachers did. She did a lot of writing anyway and QUILL just naturally got into this; it did not dominate her writing instruction. She recognized QUILL's significant pedagogical assets; most important for her was the fact that it motivated her students to want to work on writing.

But she viewed QUILL essentially as a tool for teaching, and did not think it was the only valuable writing tool. She did not underrate but neither did she overrate the value of using a microcomputer in her classroom. In some sense her slightly lower implementation of the program "didn't matter" because most of the principles of QUILL were incorporated into the rest of her writing instruction anyway. Her rewards for using QUILL were initially the same

rewards she got for using any good teaching tool: the satisfaction of seeing her students excited and learning well.

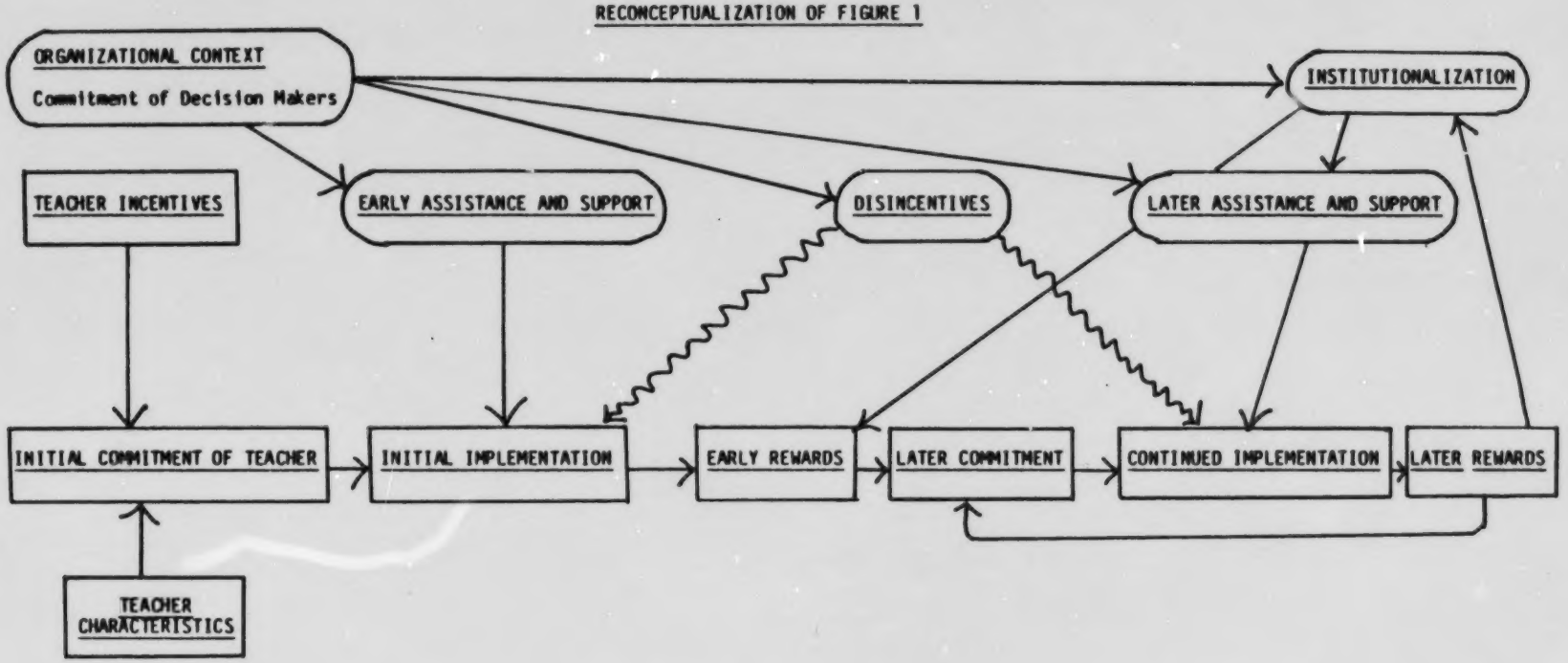
Network Analysis

As part of our analysis of QUILL implementation at the case study sites, we constructed a network analysis of the factors influencing implementation for each of the teachers we interviewed. These charts were drawn according to the model of our original conceptual framework which illustates the way in which incentives and rewards affect new implementation of an innovation. (See Figure 1.) In the process of organizing our field data in this format we realized that our original model needed to be restructured.

While we had originally conceived of "implementation" as a single event, in fact implementation usually occurs in several stages, and both the challenges and rewards of implementation are different at these different stages. We found, for example, that a teacher's mastery of the QUILL program and his or her successful management of changed classroom dynamics were critical steps in the initial implementation process. Without the flexibility and sense of accomplishment achieved in getting these factors under control, a teacher has neither the organizational ability nor the commitment needed to move on to a second level of implementation.

If teachers could move beyond a mechanical level of use, the QUILL program challenged them with its broad pedagogical possibilities. It was at this stage that a teacher would experiment with his or her own writing assignments on the computer, or try using QUILL in subjects other than writing. Not only were the rewards different at this stage (an enlarged understanding of the

Figure 3.


RECONCEPTUALIZATION OF FIGURE 1
ORGANIZATIONAL CONTEXT
Commitment of Decision Makers
INSTITUTIONALIZATION
TEACHER INCENTIVES
EARLY ASSISTANCE AND SUPPORT
DISINCENTIVES
LATER ASSISTANCE AND SUPPORT
INITIAL COMMITMENT OF TEACHER
INITIAL IMPLEMENTATION
EARLY REWARDS
LATER COMMITMENT
CONTINUED IMPLEMENTATION
LATER REWARDS
TEACHER CHARACTERISTICS
= negative effect ("prevents")
= positive effect ("facilitates")
Squares = teacher specific
Circles = not teacher specific

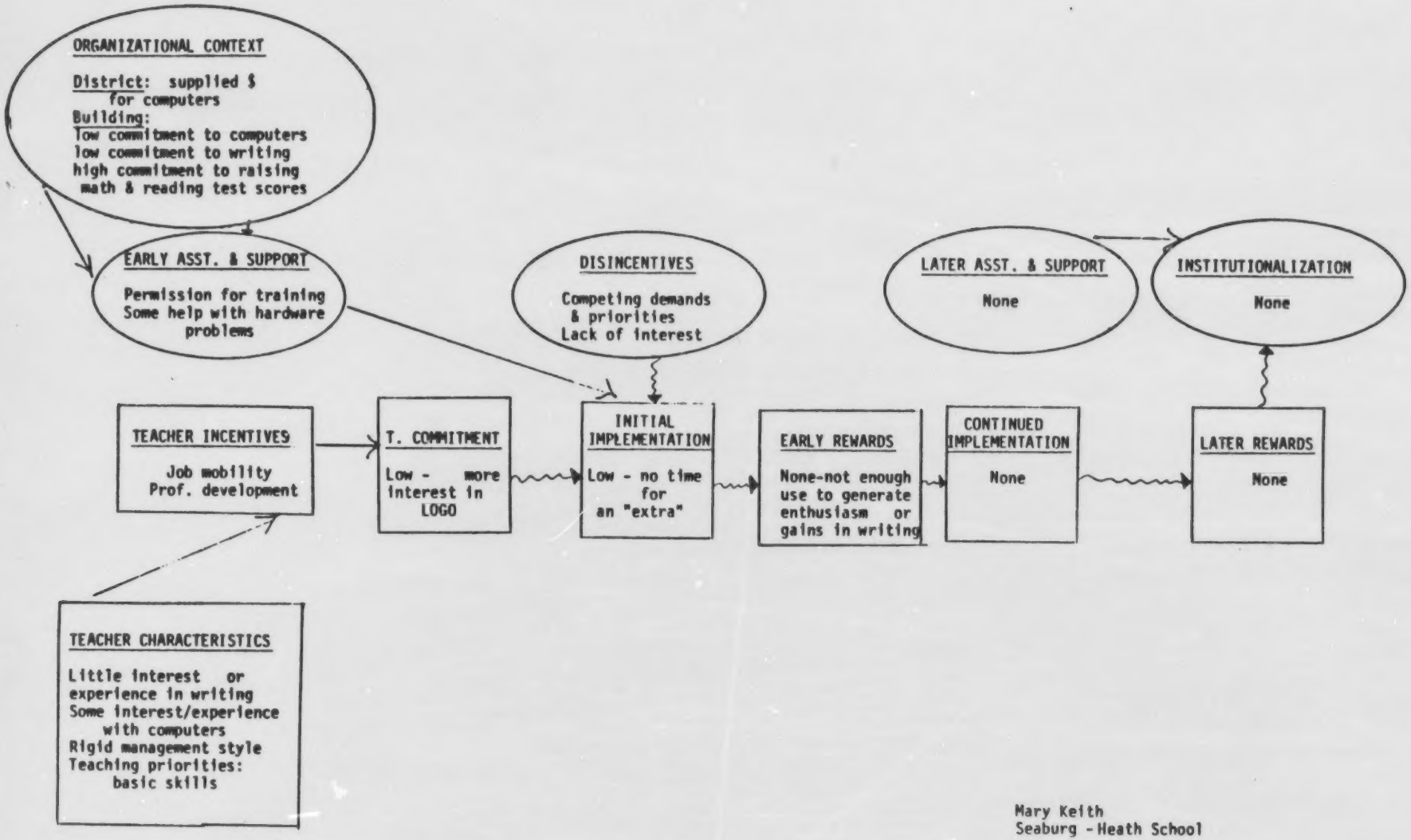
possiblilies of writing, and an expanded sense of professional opportunities) but the disincentives were different here as well.

At the first stage the disincentives might include faulty equipment or the need to reorganize one's classroom routine. Second stage disincentives might include competition for time from other school-mandated curriculum priorities or the frustration of having only one microcomputer to work with at any one time. Effective assistance and support is likely to be different at this stage also.

Figure 3 illustrates our reconceptualization of the effects of incentives and rewards on the implementation of QUILL. Implementation has been divided into early and later stages, assistance and support is specified at each stage, and both commitment and rewards are distinguished at early and later stages also. It seemed clear that a teacher's commitment to QUILL was qualitatively different after he or she had experienced it first hand. Rewards served to build commitment; later rewards cycled back to keep commitment high.

A significant piece of case study analysis took place in the development of network analyses for each teacher. All the network analyses can be found behind the case studies in Appendix A of this report. Two are presented here to illustrate a successful and an unsuccessful implementation effort.

Mary Keith (see Figure 4) worked in a district which had agreed to provide money for computers, but support for QUILL in her building was very low. The principal was not interested in the project, the local facilitator was ineffectual, and there was only minimal release time provided for training.



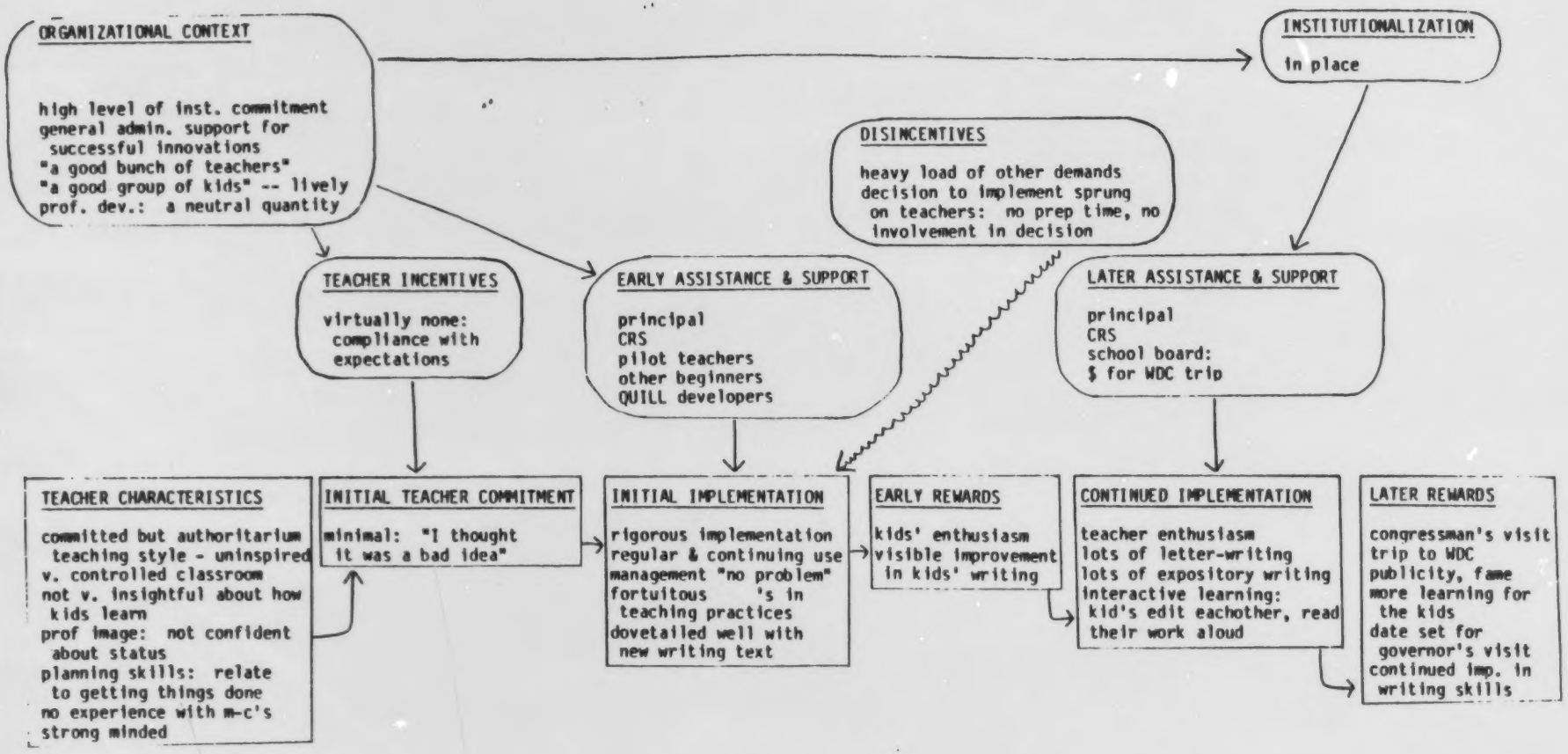
Mary Keith
Seaburg - Heath School

Figure 4.

Moreover, Mary herself was interested in QUILL primarily as a means of job mobility and promotion: she hoped to become a district computer resource person. She had little interest in writing and a fairly rigid classroom management style, neither of which augered well for QUILL's success.

Because her interest in QUILL per se was low, she did not learn the program well in the beginning and her initial level of implementation was low. She used QUILL infrequently and at a very elementary level, because she did not know how to get around the program herself and did not take any extra time to learn. Also, the time investment and classroom flexibility needed to make good use of QUILL competed with the building goal of improving basic skills test scores. Because improving test scores was a mandated school priority and QUILL was not, and because Mary's commitment to QUILL was low to begin with, QUILL got little attention in her classroom.

Because she had not used QUILL often or effectively, Mary got none of the typical early rewards: kids' excitment; greater attention paid to written work; improved writing skills. She had not even worked out the initial difficulties of classroom management with QUILL, so each instance of use was problemmatic for her. Neither the district nor the school provided any follow-up training or assistance. Without reward or encouragement from any quarter, Mary's low level of implementation dwindled to none at all. Since no one in the district was tracking the project Mary's discontinuation of QUILL was not even noticed. Needless to say, no institutionalization occurred at Seaburg.



Lily Porcello F.D.R. School - Rowley

Figure 5.

The organizational context in which Lily Porcello worked was significantly different. (See Figure 5.) First, her district had piloted QUILL the year before, and made the decision to expand QUILL use to all fourth and fifth grade classrooms. The district supported its decision with an initial three-day QUILL training, Curriculum Resource Specialists in every building to help out the QUILL teachers, and an overall interest and concern for the project. Moreover, all of Lily's colleagues were introducing QUILL to their classes at the same time, and one of them was a pilot teacher who had been through it all the year before. In short there was more institutional support at all levels at the FDR School than there had been for Mary at Heath.

On the other hand, Lily had no choice about using QUILL and had no commitment to it in the beginning. In fact, she thought it was a bad idea. But she followed the QUILL introductory lessons vigorously nevertheless, got a lot of support in the process, and continued to use QUILL frequently and "by the book." She was an extremely well-organized teacher and developed a good routine for using it in her classroom. (As she put it, "It takes more than a microcomputer to disrupt my classroom!") QUILL dovetailed nicely with a new language arts textbook which was in its first year of use also -- rather than competing with, QUILL complemented some of the school's other curriculum priority areas.

Lily was surprised and delighted by her students' excitment about QUILL, and especially by the improvement in their writing. She used QUILL often for different kinds of assignments, which were rewarding in themselves. For example, her students expanded their letter writing activities through the Mailbag: they wrote first to their principal, then to their Congressman, who

was invited to visit the class, then to the President to request a visit when they went to Washington to visit their Congressman. Their invitation to Washington was a direct result of a QUILL activity (Mailbag), and the class raised enough money to cover the costs of the trip in part through the support of the school board.

The publicity and fame the class received going to Washington was certainly a kind of reward for Lily, which circled back to build her commitment to the program. Equally rewarding was her students' new interest in writing, however. In Lucy's case, it seems that in following QUILL she learned some effective teaching techniques she had never used before, which actually improved her instructional style. Thus her students were perhaps more interested in her than they had ever been before.

The importance of the steady support she received in her district as well as her own superior organizational skills should not be disregarded in considering why her class did so well with the program, however. It is significant that a teacher without much initial commitment to QUILL beyond satisfying a district requirement could become as solid a user as Lily became.

Vignettes

In the process of working out and comparing these network analyses, we developed some hypotheses about the relative importance of individual teacher characteristics and organizational context in determining the success or failure of QUILL implementation. For example, it seemed from the cases that a certain level of institutional interest and support was critical to insure the

success (and certainly the institutionalization) of an innovation. Conversely neither personal experience with microcomputers nor a strong initial commitment to the program seemed to be prerequisities for successful implementation. A prior interest in writing did seem important however; possibly a necessary but not sufficient condition.

A certain flexibility with regard to classroom management also seemed important, but a structured flexibility: successful QUILL implementation required a fair amount of logistical organization just to see that every student got onto the computer with some regularity.

Our case studies represented different combinations of amount of support and success of implementation; by looking at two teachers at each site we could see how individual characteristics played into the relationship between these two factors. But what about those combinations not represented in the case studies? To round out our data we sought information from other QUILL dissemination sites where the relationship between support and success of implementation was somewhat different from what we had seen already.

We interviewed one teacher who had succeeded with QUILL with virtually no institutional support, one teacher whose district provided a lot of support but who never really got QUILL off the ground, and two teachers involved in another research project which provided them with extraordinary levels of support -- the researchers spent one day a week in the classrooms and began to meet in a collaborative group with the teachers a few months after QUILL's introduction. Our interviews were aimed at illuminating the relationship between individual teacher characteristics, level of support and success of implementation. The vignettes may be found in Appendix A; short synopses of the interviews follow.

Joe Armstrong

Joe Armstrong taught sixth grade in Hoover City, a medium-sized urban district in the northeast. Joe was writing-oriented. He had done a lot of writing activities with third graders, but this was his first year in the sixth grade. He was concerned about how to motivate the older kids to write and thought that the microcomputer might help. He knew nothing about computers and little about QUILL. Although he came to respect the QUILL program a lot, it was the attractiveness of the computer rather than the writing program that drew him to QUILL in the first place.

Joe was a creative, energetic teacher who was always trying to think new things to do with his students. When he discovered what QUILL was all about he was very excited. He had been looking for new ways to approach writing with older students and QUILL turned up at the perfect moment. It was instrumental in changing many of his instructional techniques. Joe embraced the QUILL program, especially the Planner; his implementation was unusually "robust." He complained of having too little time to do everything he wanted to with it.

Joe was rewarded by his students' enthusiasm; he responded as strongly to it as they did to his excitement. A very positive feedback system was quickly established. Implementation was not without its problems however, and he got no support or assistance from anyone in the district. He did have a phone in his classroom, and he called the QUILL developers directly when he got really stuck on something. These phone calls and the developer's occasional visits were very important, he said: they breathed life into us at moments when we were deflating.

Clearly, Joe took a lot of initiative with QUILL; he did not need to have his hand held in spite of his lack of experience with microcomputers. He was not intimidated by the software, but it also did not bother him that some of his students knew the program better than he did. It is not quite accurate to say he had no support, however. His support came from outside the district but it provided him with the kind of assistance one might expect from a CRS or a local facilitator. His energy and enthusiasm counted for a lot, but the support he did get was crucial, it seems.

Faye Crocker

Faye Crocker had been teaching in a wealthy suburban district for many years. She had been expecting to retire within a year or two, and when her principal asked if she would be willing to pilot QUILL, she felt she needed to prove that she was not too old or set in her ways to try something new. Thus her motivation was negative rather than positive: she wanted to prove the general opinion about her was wrong rather than that QUILL per se was "right."

Faye's district had big plans for QUILL: wanted some day to have six computers in every classroom and all ages using QUILL. For the time being there were only two QUILL classrooms per school, with one computer in each. The QUILL trainings were well-organized and successful, and meetings for all the QUILL teachers in the district were held periodically to try to keep on top of any problems that might arise. There was no support person per se in Faye's school, but there were district computer resource people and the other pilot teacher, who taught in the third grade. He was a computer whiz and very

willing to help her out if she was having difficulty. The assistant superintendent for Curriculum and Instruction, who oversaw QUILL, was also willing to do whatever she could for implementing teachers as well.

In spite of strong district support for the program, Faye did not do well with it. She became increasingly convinced that it was not useful for her fifth grade students; that it actually made writing more time consuming and painful for them. She had her own well-worked out writing curriculum which complied with the district's process writing protocols. She felt that QUILL lessons were awkward, time-consuming to prepare, and did not have the flexibility of her own curriculum. Needless to say, she never learned the program very well, so she was never able to be much help to students having difficulty. Her compliance with QUILL protocols was cursory: she was unwilling to give the program up because she did not want to seem to be defeated, but she could not put her heart into what she was doing. Consequently her lessons were flat and uninspiring and her students got little out of it.

Leslie Grant and Sheila Fisher

Leslie Grant and Sheila Fisher taught sixth grade in a large K-8 public school in a working class Portuguese immigrant community in Bridgeville, an ethnically and economically diverse northeastern city. The teachers were participating in a study of QUILL at a large, well-known local university. The project provided computers, release time for QUILL training, and the promise that researchers would be helpful participants in the classroom when they were not engaged in focused observation. The teachers regularly participated in project meetings. Thus the research situation was significantly different from that in all the other schools we worked in.

Before QUILL was introduced, both the teachers and their students had learned something about process writing from a district writing specialist. This person conducted staff development by visiting each class one period a week for six weeks and modeling a process approach to writing. Both Linda and Sharon did a six-week stint with the reading specialist, but both had done little more than append some new exercises onto their already existing writing curriculum.

From the start their interest in the QUILL project had to do with the computers, with their association with a prestigious university, and with the extra help the researchers would provide in their classrooms rather than with the writing program.

The researchers spent several weeks observing Sheila and Leslie's classrooms before QUILL was even introduced. The two teachers' instructional styles were significantly different. Leslie's classroom ran on a highly structured time schedule, with separate periods for oral reading, math, and phonics, and several periods a week that were devoted to writing. Students had weekly writing assignments, modeled after those introduced by the writing specialist, and were expected to complete them during the alotted time periods. They had very little unstructured time to work on these or other assignments.

Sheila's classroom, in contrast, had no predictable routine. Some days writing was the only formal activity; other days the entire day was devoted to math. Formal writing assignments were given irregularly and with little apparent forethought. Students were allowed complete freedom with respect to genre, topic, and number of paper drafts. Some students completed these

assignments very quickly; others never even completed a first draft. It was Sheila's practice to let her students work at their own speed, consequently, there were few firm requirements or deadlines.

What the researchers found was that each teacher took QUILL and adapted it to their own style of teaching writing. Even with the level of assistance provided, Leslie's class used the computer almost exclusively to type in the first drafts of their weekly assignments, while Sheila's class produced more student-initiated writing, in both Mailbag and in the Library, but less formal work. In fact, many students in Sheila's class never used QUILL for anything other than Mailbag; those who did, used the computer like a typewriter, typing in the final draft of a piece they had worked on and edited at their seats first.

Leslie's instructional style was structured and superorganized; consequently, her use of QUILL, especially at the beginning, was rigid and unimaginative. Sheila's informal classroom was more conducive to students playing around on the computer, but her lack of structure meant that few formal assignments were ever done with QUILL. Moreover, Sheila never learned the Writer's Assistant commands, so her class was never able to get beyond an elementary use of the keyboard. Leslie did learn these, her class used the computer more consistently and eventually, as she became more comfortable with both the technology and with incorporating QUILL into her curriculum, she loosened up and became more imaginative with the program.

Upon completion of the case studies and the vignettes, we found we were able to make some generalizations about how QUILL had been implemented and institutionalized in our case study classrooms, what had influenced the levels of implementation and institutionalization, and what role the teachers' incentives and rewards had played. Here we discuss some of the key factors at work.

Gatekeeping: Motivation and commitment of Decision Makers

No one disagrees with the notion that the building principal is important in school improvement efforts, and that a key district administrator (superintendent, associate superintendent) can likewise play an important role in district-wide efforts. In our sites, the roles people in these positions played in gatekeeping were remarkably varied. In Heath School and the Countryville district, for example, the motivation of the principal and the district administrators, respectively, was symbolic at best, resulting in a "go" decision for QUILL training, but no involvement afterwards.

In locations such as Martin Luther King Middle School and Heath again, the motivation was misguided; the school could not really afford the equipment needed and/or the primary goals of the school competed with the use of QUILL for time and attention. In most cases, decision makers did not know what involvement in QUILL really meant -- they trusted the judgment of someone external to the school or district, as in the case of MLK where the nearby service center director expounded on QUILL's virtues, or they leapt on the bandwagon, attracted to computer use and in some cases to the combination of computers and writing.

For some, notably Beechwood/Rowley, the district administration was highly motivated to give QUILL a rigorous trial, and delayed any decisions about district-wide QUILL adoption until the trial had been completed. With the substantial evaluations conducted by Beechwood/Rowley and Carleton, a clear timeline and path to final commitment were spelled out in advance and followed. This seemed to make a difference, since these were the two sites in our sample with high levels of institutionalization.

Incentives for Teachers

Incentives for teachers varied according to the focus and nature of their interest in QUILL. First, teachers were drawn towards QUILL because of an interest in computers, or in writing, or in both. Usually the draw was for computers. This sometimes derailed the instructional aspect of QUILL, as in the case of Mary Keith in Heath School and Paul Anthony at MLK. Both wanted to work with computers and found programming more attractive than word processing, so they turned aside from QUILL and the writing potential of the program was lost. Sometimes QUILL hooked teachers (and kids) on writing through the draw of computers, as in the case of Joe Armstrong and Robert King. In other cases, teachers were drawn to QUILL because of its potential to improve writing, and got hooked on computers in the process. Clearly the focus of teachers' incentives has an important role to play in the eventual outcome of the implementaton effort.

The nature of incentives also varied. We had no cases where teachers were offered more money or credits to use QUILL. In fact, teachers were explicitly offered nothing to implement QUILL except the opportunity to participate in

inservice and to have a computer in their classroom (except at MLK, where they had access to computers in a lab). Teachers were motivated by the prospect of career advancement (Mary Keith aspired to be a computer coordinator, a new role being implemented in the Seaburg district), professional growth, an increase in student learning and/or enthusiasm, and an opportunity to keep up with the latest in education (a negative corollary to this is the concern to "not be left behind").

Finally, an organizational incentive experienced by teachers in Beechwood/Rowley and Carleton was the mandate to use QUILL. Teachers such as Lily Porcello felt no personal incentive at all when they first started working with QUILL: it was simply part of the new curriculum.

The last thing about incentives that varied was the ultimate expectation for the teacher, or the answer to the question, "incentive for what?" At MLK the principal wanted to give the teachers an opportunity for professional growth, so the incentive was to attend a training and try out QUILL. In Beechwood/Rowley, on the other hand, teachers were expected to use QUILL regularly and well, integrating it into their language arts curriculum. When expectations for use differed, outcomes did also. At MLK implementation was symbolic at the end of the year; at Beechwood/Rowley, QUILL had become a part of the district curriculum.

Barriers to Teachers

QUILL requires equipment, time, new skills, rearrangements of schedules, reorganization of classroom routines, etc. Yet schools are busy places, subject to many more expectations than they can possibly fulfill. Consequently, the barriers to teachers' use of QUILL were many.

In Countryville, teachers waited for the better part of the year to get the kind of monitor they needed to use QUILL. In MLK getting disks took weeks, if the money for them was available at all. Equipment and materials problems were numerous, and in many sites teachers did not have anyone else to turn to to solve them.

QUILL requires learning how to use a text editing system. While training provides some practice, there is not enough time for teachers to become proficient, and even once proficient, it is easy for teachers to forget without repeated use. Mary Keith never became proficient, and concluded that her students could not become proficient either. Paula Decker never had the chance to use the system, and so remained unhooked from its full potential for use with her students. Without a good familiarity with the QUILL program, it was difficult for teachers to take full advantage of it as an instructional tool.

Paula's inability to use the system conveniently (i.e., the lab was locked when she could have done so) points to another barrier. The way the computer lab was used at MLK resulted in no connection between instruction and QUILL. With QUILL in use at a location remote from the classroom, it did not take long before it became just something else the students left the room to do. Not seeing students actually producing their writing, and being there for queries, problems, and blocks, the teachers lost touch with the very process they said they valued for their students. Since QUILL was only used in one of their classes, it did not permeate their day -- driving its saliency still further from their immediate teaching situation.

Schedules also provided to be barriers to QUILL use. Again at MLK, teachers couldn't confer and discuss with each other because they had no overlapping free periods. When time was set aside for just such occasions in Beechwood/Rowley, it paid off in continued, revitalized use of QUILL.

Other classroom management problems plagued QUILL use. In Beechwood/Rowley, Esther Borrelli was a highly strctured, group-oriented teacher when introduced to QUILL. She needed all her students' attention when she taught. Consequently, it was difficult for her to rationalize students being on the computer at all times during the day, for they would always be missing work. She scheduled time for QUILL for only a brief time during the day. Likewise, at MLK students were just not in Paula or Frank's classes much (one period each). It was unrealistic to expect that many students would use QUILL for any significant amount of time under those circumstances.

Support to Teachers

It was clear that the level of assistance and support that was given to teachers for implementation of QUILL affected the outcome of the implementation effort greatly. Support was present (or absent) at several levels. For example, while district-level administators were typically not involved with day-to-day implementation in the classroom, it made a difference when someone from the central office was tracking the program, and watching out for its best interests on a political level in the district.

Maureen Price, in charge of Curriculum and Instruction at Beechwood/Rowley, took on QUILL as her personal project, providing for significant support of the two pilot teachers, conducting her own evaluation of the pilot test, and

guiding the school board into full adoption and institutionalization of the program. Moreover, she was able to facilitate cross-discipline, -level, and -school involvement in QUILL by bringing together everyone she thought could benefit from the program in her training sessions, from high school special needs teachers to media specialists to fifth grade science and social studies teachers.

District level involvement in the project was critical to eventual institutionalization of QUILL; the absence of it usually spelled discontinuation of the program, as was the case in both Countryville and Seaburg. External agencies such as ECS in Adams, and The NETWORK in most of the schools, could be very influential at the initiation phase of the project, but it was clear from Adams that district personnel had to assume ownership of the project if anything significant was to come of it.

At the building level, a principal's interest in and support of QUILL could make a huge difference to an implementing teacher. The principal could create an atmosphere where effort expended toward QUILL was valued; she or he could make QUILL a curriculum priority, and/or override other building priorities for QUILL teachers. Maureen Price pointed out that of any school in the district, QUILL was used best at Van Ness, where Eddie Sherman took an active personal interest in the project's progress.

Conversely, in Countryville when it proved all but impossible to get ahold of the necessary hardware to use QUILL, Tom Heart remarked caustically that he wondered "if anyone really cares what's going on here." While it was possible to succeed with QUILL without a principal's support, it took a stronger, more motivated teacher (like Robert King or Joe Armstrong); less motivated teachers like Mary Keith fell by the wayside.

Resource teachers proved to be invaluable support for implementing teachers: they provided assistance at busy times in the classroom, helped teachers figure out and master the QUILL program, provided links and promoted communication between the different people involved in QUILL, and they served as a psychological support for the tentative teacher just beginning implementation. The one district in our sample where QUILL was fully institutionalized (Beechwood/Rowley) provided one curriculum resource person for each building who was responsible for helping teachers with QUILL: at the prospect of losing her CRS' to budget cutbacks, Maureen Price says, "I don't know how QUILL will survive."

It is noteworthy in regard to Beechwood/Rowley that teachers did better in general with QUILL the year all fourth and fifth grade classrooms introduced it than her two pilot teachers had the year before. Clearly the support of one's colleagues makes the implementation of innovative material a less isolated and uncertain experience. Janet Vandermeer remarked upon this several times in our interviews. The more people working together to smooth out the rough edges of an innovation the better, it seems.

Rewards to Teachers

The rewards to teachers for putting effort into an innovation depended on the success of the effort and the teacher's ultimate interest in the innovation. With QUILL, where implementation tended to occur in stages, the rewards changed over time. Early rewards included a sense of accomplishment at having mastered the software and figured out a way to fit QUILL into one's classroom routine, and especially excitement about students' excitment and success with

QUILL. (Note that the first reward is almost a prerequisite for the second. It was clear that teachers who did not learn how to get around QUILL themselves were unable to be good teachers of the program, and could not benefit from their students' success.)

Later rewards included attention and a new sense of importance derived from one's involvement in QUILL (e.g., Gretta Heller and Esther Borrelli's speaking engagements), expanded professional possibilities (Esther Borrelli considered becoming a computer resource person in her district; Joe Armstrong did become a certified QUILL trainer), and an improved professional self-image. Every teacher who had met with any success with QUILL mentioned this. Often a teacher's rewards were some combination of the above.

Implementation

A wide range of implementations were present in our case study sample. The overall success or failure of an implementation effort was the result of the interaction between the motivation and involvement of the decision makers, the incentives for teachers to become involved, the support provided for and the barriers existing to implementation, and the rewards which were forthcoming to the teachers. (For a review of the way these factors interact, refer to the "success" and "failure" scenarios described in the Network Analysis section of this report.)

Based on data collected in the Practice Profiles on change in teacher behavior and fidelity of implementation, plus our assessment of a third implementation outcome, perceived success, we were able to identify four separate classes of implementers. These were:

1. The problematic user. For these teachers, QUILL was a problem. By the end of the year, they had used the program only sporadically, with a sense of obligation, or, in the extreme, only when the researcher paid a visit to the classroom. In these cases, problems arose from one or more of these areas: the computer (e.g., difficulty learning the QUILL commands), writing instruction (e.g., an inflexible approach to language arts instruction which did not take advantage of the capabilities of the computer), or classroom management (e.g., difficulty organizing the classroom so that the computer could be used a large percentage of the time).

Problematic users had decided to use QUILL primarily because of its computer aspects. Mary Keith of Seaburg, for example, wanted to be certified as a computer teacher, while Faye Crocker of Carleton gave QUILL a try because she was near retirement and liked the idea of getting involved in the latest innovation before she left. None of the problematic users chose to try QUILL because they were convinced it would help their students learn how to write.

While Mary had almost no support available, Faye was in a school system which provided the maximum support. The support (and pressure) had the effect of getting her to continue to use the program, but only in a superficial and unconvinced fashion. She did not really adhere to the educational principles of QUILL in her classroom use of it and said she thought her students' writing skills were deteriorating rather than improving.

2. The superficial user. These users continued to use QUILL at a low level during the project period, but they made relatively few real changes in their writing instruction. They adapted QUILL to fit their own approach to

teaching, while resisting the pedagogical changes implied by its design. Their use patterns were characterized by infrequent use of the program (only a few periods a week), use of only one component of the program (Library or Mailbag), lack of integration of QUILL with their regular writing instruction and use of the word processor as a fancy typewriter, rather than a more powerful tool.

In general, these teachers did not complain about QUILL, but neither did they get excited about it. Leslie Grant of Bridgeville spent most of her first year as a QUILL teacher having students type their final drafts on QUILL after they had hand-written a second draft. Students did not use QUILL in any other way. Still, she did not complain about QUILL or attempt to phase it out of her program. She regarded herself as a QUILL user.

Interestingly, with extraordinary support, this superficial user began to move toward more solid use. She was involved in a series of teacher-researcher meetings during which the project team discussed current classroom practice, potential QUILL activities and students' writing. With this input and a growing comfort with the program, she became a fairly creative user.

Toward the end of the year, Leslie organized a newspaper-writing project which gave students the opportunity to write collaboratively, have more freedom in choosing topics and target their pieces toward a specific audience. Students produced fewer hand-written final drafts, i.e., they typed from first drafts with hand-written edits. In addition, students began to read one another's work on the computer during the daily silent reading period.

Superficial users were characterized by a shallow understanding of QUILL's purpose as an innovation. This did not seem to be related to their classroom management style or to their experience with computers (although a lack of experience with computers could exacerbate the problem. It did, however, appear to be connected to their approach to writing instruction. Superficial users tended to not really understand "the process approach to writing," superimposing instead a rather rigid sequence of stages of the writing process on their previous classroom practice.

3. The solid user. These users did a reasonably thorough job of implementing QUILL. Their classrooms were characterized by across-the-board use of QUILL components, interesting variations on suggested QUILL activities, perceived success and recognition of students' improvement. Their approach to writing instruction changed, but in some very important ways managed to remain the same.

Greta Heller of Beechwood/Rowley, for example, created an impressive bulletin board of nearly-perfect papers and accompanying illustrations -- but the reports were the standard "explorer biographies" and they had been written in the standard way. Later that year, she branched out into different genres; her students wrote haikus and other poems -- but she still chose the genre and the general topic area for each assignment. She used the Planner infrequently, but focused more on pre-writing activities than she had previously. Such users neatly illustrate the "mutual adaptation" which characterizes the adoption of many innovations (Hall and Loucks, 1978).

Users who achieved solid implementations had to have one of two advantages: either they were highly motivated to explore the use of computers in teaching writing or they had an excellent support system. Robert King in Countryville, who had an unthinkable amount of trouble getting his equipment, nevertheless became quite happy with QUILL because he regarded writing as a high priority in his classroom and because he could see his students improving their skills. Lily Porcello of Beechwood/Rowley, whose initial motivation was not high, became a solid user thanks to the solid support she received from a district-level language arts supervisor and an in-school language arts specialist.

This class of users might have some trouble with the computer and classroom management aspects of QUILL, but not as much as the users in the first or second categories. Those aspects of the program did not turn out to be disincentives for them and the rewards of seeing their students' writing improve overshadowed any residual difficulties.

4. The super user. A few teachers found QUILL to be a major influence on their classrooms -- and on their teaching style. These users went far beyond the activities suggested in the Teacher's Guide and, in some cases, made suggestions that were incorporated into later training sessions. For these teachers, writing became an activity of utmost importance in their classrooms and the flexible classroom organization which effective use of QUILL demanded became the norm.

These impressive changes often coincided with other major influences on the teachers. Joe Armstrong of Hoover City, for example, had always been interested in writing. He started using QUILL the year he was transferred from a third grade to a sixth grade classroom. His concern with motivating his students to write instigated his interest in QUILL.

As he explored the program, he discovered that his students' writing ability blossomed, as did his interest in computers. His use of QUILL was among the most creative of all the QUILL teachers, even though he had almost no support within his district or school (most of his support came from the QUILL trainer) and he had no prior experience with computers or a process approach to teaching writing.

In contrast, Janet Vandermeer of Beechwood/Rowley, who had always used a rather sophisticated process approach to writing became a solid but not super user. She incorporated QUILL into her classroom where she felt it supplemented and complemented her writing instruction, but she did not become a QUILL "fan". For her, QUILL was not the embodiment of this new, exciting perspective; for the super users, it was.

This group of users changed significantly through their use of the innovation, but they also changed QUILL. Since QUILL is designed to encourage teachers to come up with their own activities and to integrate it into their own classrooms, expanding QUILL's possibilities is one indication of a robust implementation. Super users often become proselytizers; Joe Armstrong was the only source of information about QUILL in his district and he was slowly spreading it, classroom by classroom, by word-of-mouth.

Summary and Implications

Figures 4 and 5 illustrated the important influences of implementation and institutionalization in two QUILL settings: one turned out a failure and one a success. The role of incentives and rewards is a difficult one to define in both pictures since other factors interact with them continuously, coming into play at different times in the implementation process.

Our major findings include:

- Disincentives can dilute the strength of incentives, often destroying their influence completely. Competing school goals, lack of equipment and supplies, location of computers outside the classroom -- all of these dispell the power of teacher incentives for professional growth and increased student learning, and work to decrease implementation as a possibility of institutionalization.

- Support and assistance from others can not only eliminate disincentives but can serve to maintain the influence of incentives over the course of the implementation process. The value of eliminating disincentives is clear -- insuring that equipment is complete, functional, and accessible, supplies are sufficient, the competing demands on teachers are either eliminated or postponed -- this can allow teachers to pursue their personal rewards (e.g., personal growth, which can include student learning); further, support activities such as regular convening of teachers for problem solving and sharing sessions and classroom visits can help maintain the power of the initial incentives as well as provide other complimentary rewards such as opportunities to interact with professional peers.

- Organizational incentives such as mandates to attend training and/or use an innovation, combined with good and ongoing training and support, can contribute to successful implementation. In the process, teachers who feel no personal effects at all to begin with can experience significant rewards due to personal success with the innovation and visible student enthusiasm in learning.

Several implications of these findings are:

1. An intensive, long term implementation effort, and adequate, ongoing training and support is absolutely necessary until teachers have mastered an innovation and incorporated it into their teaching.

2. Relying on teachers' personal incentives to lead them to and through implementation is risky; combining either organizational incentives such as clear expectations that uses the innovation and assistance and support is more likely to succeed.

3. Decision makers need to understand the requirements of an innovation sufficiently to determine whether it is a cost effective choice. If school goals will compete, if equipment is not adequate, and/or an ongoing support is not possible, it will be best at this point not to adopt an innovation (such as QUILL) that requires these.

Dissemination

While major findings and implications of the study have been described above, future efforts to disseminate these will refine and elaborate both.

Dissemination will continue through:

1. Publishing two articles, one for a language arts and technology audience and one for a change and school improvement audience. (See Appendix C for outline of one article.)

2. Presenting at several conferences including the AERA meeting in April, 1985; Lesley College Computer Conference in May, 1985; and the NCTE Meeting in October, 1985.

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APPENDIX A: Case Study Reports
Network Analyses of Teachers Implementing QUILL
QUILL Vignettes

Paula Decker and Frank Cooper
Adams

District Characteristics

Adams is a medium size city in a small northeastern state with 39 schools serving approximately 20,000 students. Like other school districts in the northeast, Adams' student enrollment is declining, especially at the elementary level. Every year two or three schools are closed, which results in instability and in-fighting. As in other cities, a large percentage of the voters have no children in school. It's difficult to get enough money budgeted to maintain stable services.

About 75% of Adams' students are minority: largely Black and Hispanic. Some schools have nearly 100% minority enrollment. Parents are relatively inactive in the schools as a whole.

For years, Adams schools had a poor reputation for educating students; the community, among others, was unhappy with the product. But there is currently a sense that the system has hit the bottom and is on the way up. Several major organization and staff development efforts have been undertaken district-wide which are clearly in line with current research and rhetoric on effective schools. David Vine, principal of Martin Luther King Middle School attributes this to the Director of Staff and Organization Development and Personnel, who, with the superintendent, has brought many nationally known people, ideas and resources to the schools. Each school goes through an instructional planning process based on standardized test scores, using a "semi-participatory" decision-making model. The planning is based on a school effectiveness model. Comprehensive staff development then occurs based on the plan. A principal's academy has exposed principals to effective schools and school improvement research, and trained them in the Madeline Hunter instructional improvement process (including practice and individual coaching by trainers).

The teacher's union is very strong in Adams. Its major issues are morale, safety, and implications of such changes as lengthening the school day and year on their working conditions. (Many teachers feel a great amount of personal pressure resulting from published test scores and comparisons.) The union has a "no lay off" clause which results in an occasional extra teacher, so class sizes can often be smaller (i.e., 22 or 23).

The Adams district is divided into three areas, each with an area superintendent. The central office houses the Associate Superintendent for Instruction, to whom the supervisors and coordinators of content areas report. These supervisors and coordinators are responsible for providing inservice (there are seven early-release inservice days, of which four are "inservices of choice"), and supervision (at the middle school they coordinate this with the principal; at the high school, with department chairs).

During the school year, a new superintendent was hired (the former one became the State Commissioner of Education). The effects were experienced differently by everyone, although mainly there was a "wait and see" attitude. However, some fairly direct results were: a new rule that computers could not be taken home by teachers, and an effort by the superintendent to have "his finger in everything." Overall, there seems to be an initial need to take and communicate clear control over the district.

Building Characteristics

Martin Luther King Middle School (MLK) has 800 students in fifth through eighth grades. The school is on the fringe of a middle income area, yet 67% of the students qualify for free lunch (i.e., are from low income families). The school population is 99% black. The principal and the two assistant superintendents are also black, as are many of the school's 46 teachers.

The school building is seven years old -- a large, windowless concrete structure that looks like a factory from the outside. The modern design, the principal recounts, was done by the only black architect in Adams at the time a new building was decided upon, and is not particularly pleasing. There is no main entrance, but several separate doors, many of which lead down concrete tunnels to internal hallways. The eight instructional areas are open-space, holding four classrooms worth of kids with adjoining offices for teachers. The lack of windows, concrete walls, and middle school-aged students combine to make it a fairly cold, noisy feeling environment. The computer lab is a self-contained, small room off the library-resource center -- again, windowless with concrete walls.

MLK has a heavy academic emphasis. It hasn't been an "effective school" traditionally but, as the principal notes, it does well for the population it serves. Students have many diverse opportunities, such as out-of-town and out-of-state trips, foreign languages, and honor society. They had the state winner in folk literature and art, the best band in the area, the best chess team, chorus, and basketball team (note that athletics is mentioned last).

Since David Vine, the principal, arrived the previous year, there has been heavy emphasis on becoming an "effective school." (Note that this mirrors the emphasis of the district.) There are clear behavioral expectations for students, with consistency across teachers in consequences for misbehavior, including suspension, work, reprimand, home visits, etc. "If education is preparation for life," Vine says, "these children have to know that what they do here they're going to be accountable for." The staff are very supportive of the school's norms and regulations. There is an effort to give kids responsibility and also to reward them for good performance.

Vine is participating in Adams' Urban Academy, which focuses on the development of principals as instructional leaders. He has been trained in instructional supervision, and spent the year practicing new skills. (Note that on the first site visit, Deane Douglas, a staff member from ACES who not only had support responsibility for QUILL, but was assigned to coach Vine in his instructional supervision practice, had problems getting him to keep appointments with her to actually do classroom observations.) Vine's goal since he came to the school has been to push academics, keep the school attractive, and maintain discipline. He has set up a "Renaissance Program" for students who have had the least amount of academic success, and spends much of his own time there, including teaching an English class. He noted that he didn't support socializing among staff as a way to increase morale, since teachers' morale should increase when they have taught something and their kids have learned it.

Every year the school works on an instructional plan for improvement. This year their attention was on basic skill mastery, as evidenced by achievement test scores. The Renaissance Program gave lower achievers more time on basic skills subjects, and this resulted, by the end of the year, in significant growth on the tests. They also enriched the high achiever program, adding Latin, literature, and Algebra I. Teachers were involved in setting school goals, which were made public and circulated. A test preparation program was used school-wide to make kids "testwise." As a result ITBS scores for every grade averaged at grade level, which was six to eight months higher than previous years. Vine attributes this growth to setting clear goals and expectations for teachers and students (teachers concurred that raising test scores was a clear goal during the year), giving support and encouragement, stimulating the competitive urge of the kids, and providing inservice opportunities for teachers.

Vine has worked to build a good relationship with the staff. "We like to solve problems at the lowest level," indicates his effort to keep the union out of the operation of the school. He has taken academic teachers off hall and cafeteria duty for the first time, and in return they have "given" on the class size issue. He professes to always listen to teachers, to cover them when they need it, and as a result teachers sometimes ignore union regulations that might stand in the way of getting something done school-wide. The fact that he has no grievances against him attests to the success of this "give and take."

Vine is outspoken about his belief in innovation and professional growth opportunities for himself and his teachers. "Every day I believe you should try to improve some aspect of yourself and the institution you work in." His long range objectives for the school are based on his reading (he is clearly well read, from his references to current journals and research) and his experiences.

People outside the school (at central office and ACES) report this energy for innovation. "He loves to try new things." They also note that MLK has changed for the better since Vine arrived. There is a relaxed, yet controlled feeling; the staff have more energy recently. Vine rarely leaves the school during the day (he characterizes it as a "matchbox") and clearly this kind of attention has paid off. The atmosphere to an outsider is friendly, although people (particularly Vine) are very busy, and constantly moving. Vine seemed to value the time spent with me while usually late for interviews (and once didn't arrive at all because of being called to the central office at short notice). He talked at length and with great intensity and attentiveness. There was clearly an important degree of respect for me, given that in a graduate class, prior to my first visit, he had received the set of articles the case study researcher had just edited for Educational Leadership.

QUILL's Introduction into Martin Luther King

In the late spring of 1983, NETWORK staff of the QUILL project solicited applications from school districts to become part of their dissemination effort of the following school year. Participation would include training, software and teacher materials, and ongoing support. Earl Thompson, Director of Instructional Services at the Education Service Center (ESC) in the center of the state had learned about QUILL earlier in the year through contacts with project staff. In his role of serving schools wihin a sizable region of the state, Thompson decided this was an opportunity to do several things: bring new things to his schools; give them an experience with a tool that translated current research into practice; get schools in his area to work together across district lines; and in doing all this, play out ESC's leadership role. Thompson put together a collaborative with schools from three districts, and he needed a city district. He knew and was current working with Alex Wilson, the Adams Math Supervisor; he know the district had a writing problem. But most of all, he reported, "I could talk to Alex. You could call him up and get things done." In this case the thing to get done was putting together an attractive enough application to get chosen as a dissemination site for QUILL.

Howell pushed Ann Mills, Adams Language Arts Coordinator, since he was worried that computers in the city would remain only in math and saw QUILL as a way to ge them into other areas. Mills, who Thompson describes as "good, but no leader," picked up the ball, chose an elementary, middle, and high school for QUILL, and was designated as the "local facilitator" for QUILL in Adams. This meant, as spelled out in the QUILL application, that she would attend a preliminary training meeting at The NETWORK; would attend and assist in training teachers; would follow-up immediately after training, "coaching" teachers in their classrooms; and would provide ongoing support for the teachers and a link to NETWORK staff.

Mills' recollection of her agreement was, "when I heard some of the duties and reponsibilities at first, I thought, 'will I ever be in the schools that much?'" Her choice of MLK was what Thompson later called "an ideal arrangement." There would be two classroom teachers and one computer teacher forming the team. Paul Anthony, the computer teacher, was really good. David Vine, the principal, was alway eager to try new things, so she knew he would be supportive.

Mills joined the local facilitators from the two other districts, Thompson and Deane Douglas, Thompson's assistant who would hereafter coordinate ESC's role with QUILL, for a day's orientation at The NETWORK in late August. The group took advantage of their van trip to Andover to do all the major planning for training location, facilities, etc.

Back at MLK, Vine had welcomed the opportunity to get involved with QUILL because not only did he "believe in innovation," but he strongly believed in writing and thought it was neglected in schools. He saw the computer as a novel way to involve kids in writing who wouldn't normally be involved. He chose teachers who he believed were open to change, were progressive and professional, and who were seen as leaders in the school so they could eventually get others involved. He considered the teachers he chose as "state of the art" teachers who were interested in staying alive professionally and wanted to get in on the ground floor of computer use. Vine knew it was impossible for him to provide monetary rewards for teachers who worked extra hard and did a good job; he believed opportunities for such professional growth were also rewarding. He reported that the teachers he chose were glad for the opportunity, not frightened like others. Paul Anthony, the computer lab teacher, Paula Decker, a 6th grade "good" teacher, and Frank Cooper, a 7th-8th grade teacher with a background in a process approach to writing and outstanding professional accomplishments (had been an Oxford fellow the past summer; worked with a college institute) were chosen to use QUILL. It was decided to try out QUILL with the high achieving students, so Decker's 5th period science class and Cooper's last period reading class were to be those using QUILL. The students were to be given QUILL assignments by their teachers, and then they would go to the computer lab where Anthony would have the responsibility to teach them and help them with the computer use.

In October, David Zacchei, from the QUILL staff, conducted a three-day training session at ESC for the teachers and local facilitators from the three school districts in the state. The following day, he, the local facilitators, and Dean Douglas (to whom Thompson had turned over full responsibilities for QUILL) coached the teachers in their classrooms, helping them conduct the first QUILL lesson for their kids.

Assistance and Support for the Use of QUILL

The first month of QUILL use in Adams was characterized by Mills as "the blind leading the blind." Even prior to training there was considerable scrambling around, since the word that QUILL required the use of two disk drives had not filtered down to those who most needed to know. (Anthony noted later that he'd bet the district wouldn't have been so quick to commit to QUILL if they had known that.) Much of the start-up activity was concentrated on getting the equipment and the materials set up and available. At MLK, Anthony, once he knew about all the expectations, was able to gear up quickly. He designated four of the twelve computers in his lab as QUILL computers, hooking each up to two disk drives and one to the only printer he had.

Because of his computer expertise, Anthony became the "leader" for QUILL at the school. Originally viewed as a support person, a teacher who could supervise the kids' use of QUILL, Anthony had certain expectations for Decker and Cooper, i.e., that they would have QUILL writing lessons in the classrooms and their kids would come with assignments to do on QUILL. He would help them with the computer mechanics. He was quite happy to do this. He liked QUILL as a word processing program (although he seemed to think Bank Street Writer was more self explanatory, he liked QUILL's storage system and MAILBAG, and he hated the adult-oriented word processing systems he'd tried out for the Apple).

As a support for the QUILL teacher, Anthony would hold sessions for the two pairs of kids who can to use QUILL during the two periods per day designated for the teachers. But many times when it looked to him as if one of the pair was only watching while the other typed, he'd pull the kid off of QUILL and have him or her do Logo on another machine. Programming clearly took priority for him over QUILL. He also thought the kids needed to know more about computers and become better at finding their way around the keyboard before they could use QUILL well (a decision he made after the first month with QUILL), so he ran them through some typing and programming software for a week or two before having them go back to QUILL again.

All through the year, Anthony made the QUILL computers available to the kids during those two periods. He made sure there were disks; and gave kids assignments when they came within them (this became increasingly more frequent as the year progressed). He interacted very infrequently with the two teachers. At the beginning he and Cooper "caught each other on the fly. "Frank's running down the hall and he says, 'hey, do me a PLANNER' or 'how about doing this for tomorrow?'" There were no times designated (nor any possible) for the teachers to meet together, given their totally different schedules. As Anthony reflected, "The school district didn't know what they were getting into. Consequently, here's Paula down that end of the building, Frank at this end, having nothing to do with each other as far as the regular teaching processes, don't see each other during the day, not teaching the same program.

Here's me at another section of the building supposed to be helping them, and none of us have schedule where we can sit down and meet." Because Anthony and Cooper had a good relationship (Looder had even been Anthony's student teacher at one time), they could coordinate fairly well. They both trusted each other's judgement. Decker, however, was merely a remote fellow teacher to both, and had her own ideas. As Anthony noted "not that Mrs. Decker's not a very good teacher, but she has her ideas and I have mine. She'll say 'would you do this with the kids' and I'll do it even though it's not what I particularly feel should be done."

Outside of the support given by Anthony, the teachers had very little help or support from others. Vine would infrequently ask how things were going, or visit the computer lab and see some of the kids' work. Mills was in the school several times during the year to observe English teachers as part of her supervisory role, and she would ask how QUILL was going. She infrequently sent teachers items about QUILL, such as the twice-published QUILL Scribbles. Deane Douglas was in an auto accident a week after training and was out for two months. She then found it impossible to visit schools because of the other demands of her job. She reflected that it cost too much for an agency like ESC to do much intensive follow-up with schools, other than make a visit to write a report. She had lots of ideas about how to network classrooms, share ideas, etc., but neither she nor the local facilitators, who were stretched too much, could give the support needed. "I know what it means to make changes in schools and the support that's needed to make it happen, even it it's just to say 'wow, look what you did.'" Nonetheless, neither she nor the others were able to follow up. The Adams Computer Coordinator commented that he trusted Anthony to make sure the computer use had instructional value. Anthony had asked him to come out to the school to see how things were going, and his response was "why should I go to Paul to have coffee when I could be out in another school where there are problems?"

The Teachers and Their Use of QUILL

Frank Cooper. Frank is an easy-going, personable teacher in his mid-thirties. He seems to have a nice, though business-like relationship with his students, and runs a fairly loosely structured classroom (gives assignments, then students work independently and in pairs and he moves around the room). His first love is clearly language, especially writing, but was currently assigned to teach four periods of math and one of reading. "I'm not in my happiest moments now." Frank had just finished a course at a nearby college on writing composition for secondary students, where the process approach to writing was emphasized. He had been involved in another college's program for teachers, where he had developed units for the teaching of writing. And he had just spend the summer in England, where he had been an Oxford Fellow.

Frank was on a team of four teachers who had responsibility for 110 7th and 8th grade students. As with other teachers in the school, the school's primary goal for the year was clear to Frank: to improve test scores. To that end, there had been quarterly testing programs, diagnostic tests, etc. While he was not teaching writing that year, he had his own goals for that, and they were much in line with the process approach: ideas important, revision important, mechanics less so, etc.

Frank's involvement with QUILL had been all but voluntary. When he returned from England in the fall, the principal informed him that QUILL was to be one of his classes. He said he had been a bit skeptical about how the computer could be applied to writing process, since he thought it would eliminate the teacher. But now he knows that's not true, and he's glad he's part of QUILL.

In his QUILL training, Frank saw QUILL as "dovetailing nicely" into the process approach to writing that he valued. He thought QUILL got students into the "writing process frame of mind," so that it had a lot of application to skills the students were going to need as adults and young adults.

Frank had 27 7th and 8th grade students in the reading class in which he introduced QUILL. He sent students to the computer lab initially about four days a week, two to four students at a time, so each student barely had the chance to use QUILL every other week. At the beginning of the year, Frank had students assigned to pairs and a routine worked out where students knew when it was their turn. As the year went by, there was less regularity in the flow of kids to the lab, and later in the year Anthony noted that he got both the "trouble makers" and the students who were extra-motivated to use QUILL.

Frank's general approach to teaching writing (note that he wasn't assigned to teach writing that year) included having kids write every day; conferencing with individual kids frequently to talk about their ideas and suggest changes in structure and organization; having them share their writing informally, with some reading aloud; infrequent peer conferencing. He incorporated some of his approach into his use of QUILL. He was interested in as many students using QUILL as possible; he'd conference with them briefly over what they wrote, and encouraged revision beyond mechanics. He encouraged them to share their writing, and especially liked MAILBAG because they could write directly to each other.

Early in the year, Frank created a couple of QUILL assignments that gave the students an introduction to the various programs. One was "If I Could Change One Thing in School," in which the kids brainstormed, then created their own PLANNERS, took notes on the change they wanted to make, write a paragraph, and then revised it. As the year progressed, Frank gave kids fewer and fewer writing assignments, typically relying on them to decide what they wanted to do. Sometimes they did social studies writing. At other times, Anthony noted, they simply typed their class notes

into the computer; sometimes typing their lists of assignments copied from the board. Anthony tells a story about two boys who came in without an assignment, and he suggested they use MAILBAG to write "rank outs" (nasty jokes about each other, e.g., you're so fat you . . .) back and forth. They were really into doing it when the principal arrived with a reporter from the local paper interested in computer use in schools! In the final couple of months of school, a couple of students who were working with Frank on the yearbook used QUILL to do some of the test writing.

After his QUILL training, Frank was clearly interested in the potential of QUILL for motivating students to write and structuring their writing in ways that agreed with how he thought writing should be done. However, he noted early on that there was an important time problem; it was impossible to get enough students to use QUILL in a short period of time. The early problems with typing speed only served to exacerbate that problem; he wondered if it was a good use of student time. At the same time he hoped for, and even planned for the eventuality of having a computer in his classroom, which would enable him to keep the kids busy and move more through. He was also concerned about the lack of time scheduled to work with Anthony in planning, and about being unhooked from other QUILL users. "We don't get enough of that (i.e., meetings after training) in this schools system . . . top echelon doesn't believe that those kinds of things are necessary."

Several things seemed to keep Frank from using QUILL "robustly": having little time allotted to QUILL (i.e., opportunity limited); being isolated from there the kids were actually doing their writing; having no sustained contact with other QUILL users or support people. Further, writing, while a public goal of the school, was clearly not the priority for the year. "There's so many priority areas," Frank noted "we can only be pulled in so many directions and not tear in the process."

Frank continued to have hopes for QUILL for the following year. Many other teachers were interested in using it. He was concerned that the opportunity for use be spread to other students. "We might find a more efficient way of using it."

Paula Decker. Paula is a middle aged Black teacher with an almost motherly style of teaching, in that she directs the classroom with a firm hand, but clearly likes the kids and lets them wander off task at times. Paula's seventeen years of teaching have included the past four years at MLK teaching 7th and 8th grade math and English. This year she was in the 6th grade team teaching science and English.

Paula was asked by David Vine to be part of the QUILL project because he saw here as a strong teacher, motivated to grow and change. Paula herself was interested in learning more about computers, which her own child uses, and so when Vine gave her the QUILL material to read, she liked what she read and agreed to be involved.

Early in the year, Paula characterized her use of QUILL as "stumbling through." She and her kids were "guiding each other," and she noted that the kids seemd to get things worked out (i.e., learn to use QUILL) even before she did. From the start she was concerned about the amount of time available, both to learn (herself) much about QUILL, and then for the students to actually make use of QUILL. She was especially concerned because she had no access to the computers except for when Paul Anthony was there. She wished she had a key to the room so she could get the kids access in a more flexible way. Better yet, she wished the computer was in her room, so she could use it for more than one period a day.

Paula used QUILL for the 19 high achieving 6th graders she had during 5tn period for science class. She ran the class in a very flexible, fiuid way, so fitting QUILL in was not too much of a problem; in fact, she was on a team where it was quite appropriate for students to be pulled out of their English class so that could use QUILL during that period as well. This Paula did with some frequency. Paula taught science by giving assignments, have the kids read, and if they had questions, they could ask her. There was not much discussion. Kids could work on other work if they finished early. There were also times during te year when other things, such as a more structured computer class and art, took kids away during this science period. Paula sat at the back of the room for much of the time.

Paula's goals for teaching are much in line with this style. She values and support independence, initiative, and creativity in her students, especially these high achievers. She wants them to see the value of education, and this can be promoted by helping them learn and work on their own.

Like Frank, Paula's use of QUILL began in a structured way. While she gave many more assignments than Frank over the course of the year, the pattern of students going to the lab with clear assigments decreased in regularity.

Paula's students were able to use QUILL up to three times a week, including going to the lab and working on QUILL assignments at their desks. She had her kids go in groups of four, and she staggered assignments. The first assignment was having each student create their own science test using PLANNER. The second was open -- students could write about anything they wanted. They they wrote MAILBAG messages to the principal and assistant principals. Another assignment was to select a book in the library and write a story that might following, given the title; then they read the book to see how similar the stories were. Finally, they had to write her message in Spanish (she didn't know Spanish, but they were taking it).

Paula's writing "instruction" consists of giving students assignments, providing them the access to QUILL through time away from their classroom in the computer lab, then encouraging them to critique their own and each other's writing. She is much more concerned that they write interesting things, that they share them with each other, than that they have her opinion about whether what they have written is good, correct, etc. She had great faith in the abililty of the students to evaluate their own writing. "I think they have the skills they need." How did she keep track of the work the kids had done? Each kid had a computer book, a binder to hold any handouts she'd given them, and all the pieces they'd written. When the kids went out, they left their books, and she could check them. (Note that when she asked some kids at random to show me their books there was no writing in them. However, there were ditto sheets with computer information, such as the vocabulary from the first QUILL lesson.) She believes that when writing on the computer the kids can readily see their own mistakes and correct them. That's the benefit of computers to English teachers, she noted, especially when it comes to spelling.

Towards the end of the school year, Paula ordered some computer workbooks to develop "computer literacy." They were at the point allowed to go to the computer lab and do anything they wanted -- QUILL or exercises/activities from the workbook.

Paula believed that QUILL had made a difference for her kids that year -- that they enjoyed revising, because they were able to see their own mistakes. She had no idea what next year would bring, but hoped that these same kids would still be able to use QUILL. She said she'd prefer having a two-period block and more flexibility to use QUILL, but in the long run would prefer having the computer in the classroom.

Paul Anthony. While Anthony was primarily set up to play the role of the support person, it is obvious that if anyone took an attentive instructional role with QUILL, it would have had to be him. So, a brief description.

Paul was a brand new, self-made computer teacher. He had taught elementary and middle schools, all grades and all subjects, for 17 years previously. He had two Bachelor's Degrees (Education and Business), one Masters (Education), a six year degree and 15 credits towards a Ph.D. "I could fill up three resumes already."

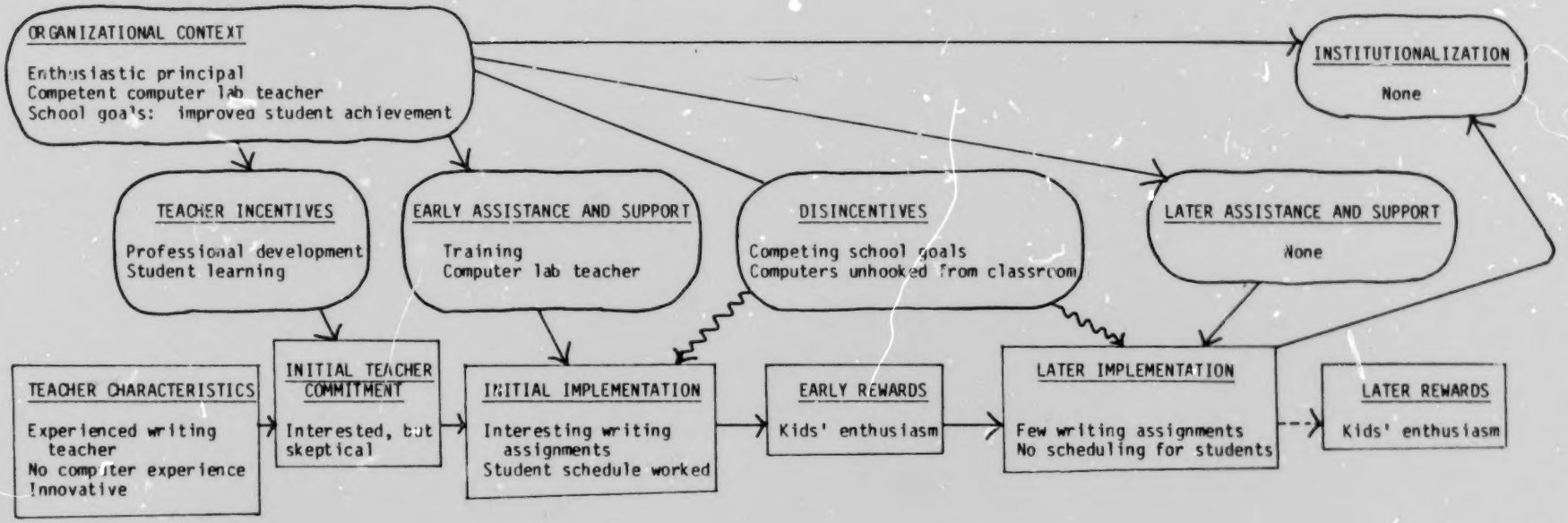
Two days before school started this year, the principal called Paul and asked him to be the computer teacher. "I said 'sure.' I'm a believer that an educated person can teach yourself to do anything -- you just get a book and read." The principal made the request based on Paul's 20 year old experience in education, and his attendance at the district's computer inservice program.

Paul's role was to provide a computer science course for one grade level, and then to help with QUILL. He could pretty much do both as he saw fit. He hustled to beg, borrow, and steal software. (One condition in taking the job was that he could bring a

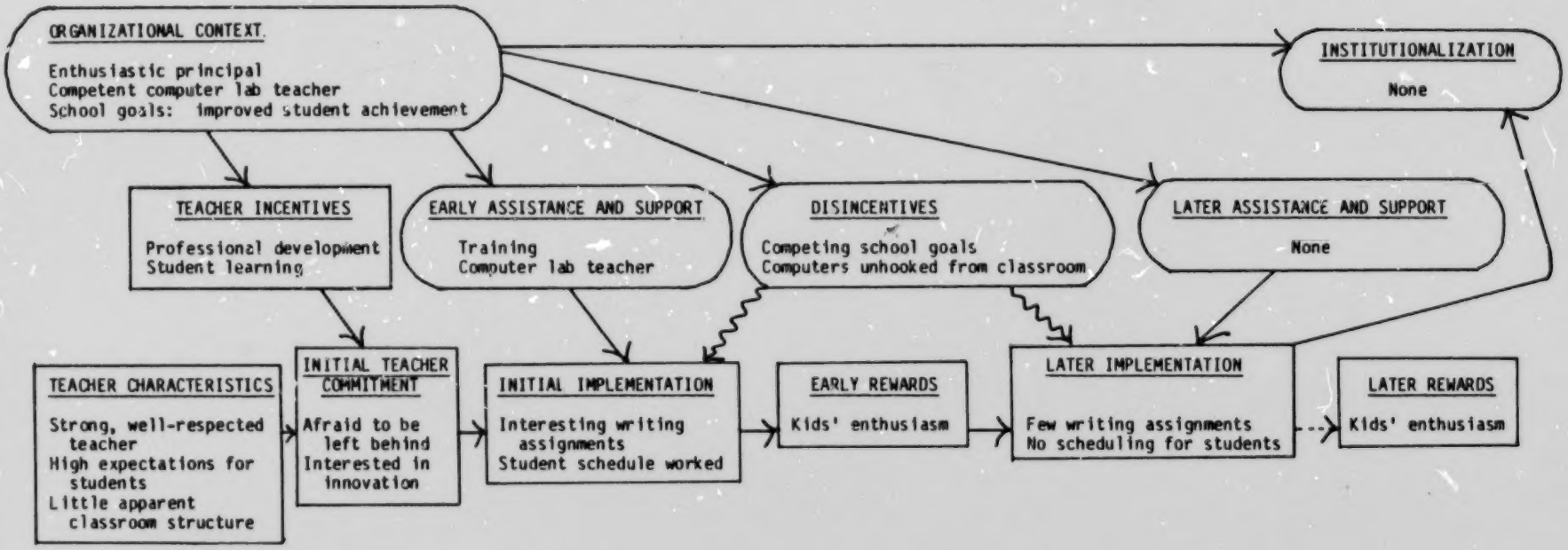
computer home to use.) While Paul was sold on his own abilities to do the job, he worked very hard against some pretty steep odds. He found it difficult to get his equipment serviced, waiting four weeks to get a monitor fixed and ending up fixing it himself. He initially had to scrounge tables within the school, set up his own machines, fill out the warrantee cards. He found if difficult to get computer paper and disks through the district's channels. And finally, he had to monitor the janitor closely, choosing to vaccum the room himself for security reasons.

Paul really enjoyed the role of computer teacher, reveling in teaching something the kids were motivated to do. His lessons were very directive: he gave students orders but offered no explanation of why they were doing what they were doing. He was very opinionated about the teachers in the school, and easily shared his feeling about what Frank, Paula, and David Vine were doing right and wrong.

Paul appreciated QUILL for its motivational effect on the kids, but he clearly did not feel that it was being utilized well. He insisted, however, that he was the computer teacher, and was not about to spend time working on writing assignments for the kids. He does take time to give the kids suggestions on their writing, asking them if they want him to point out "errors." But he doesn't want to unsurp things the teacher may be trying to do, particularly when it come to the kinds of revision they value, etc.



Frank Cooper
Martin Luther King Middle School
Adams



Paula Decker
Martin Luther King Middle School
Adams

Frank Bilder and Mary Keith

Seaburg

District Characteristics

The Heath School is part of the Seaburg Public School District, a large, urban district which serves between 55 and 59 thousand students. Of these students, 65 to 70 percent are minority (primarily Black and Hispanic) and 30 to 35 percent are white. The district has a resource center through which individual schools can request funding for specific projects and programs, including computer software and equipment. The school district provided the Heath School with funds for the purchase of computers in response to a proposal written by a few of the teachers at the school and some interested parents. This proposal included requests for money for computers for a computer lab at the school and three complete sets of the hardware needed for the QUILL program. Once the money was allocated, the district had no more involvement with the computer programs at Heath. Since the principal was not interested in computers, one of the 4th grade teachers, Frank Bilder took responsibility for ordering the equipment, setting up the lab, etc. Thus, the commitment of the school district went only as far as providing funds for the computers. Though there were two people serving as computer coordinators at the district's resource center, neither of them were involved in organizing the project or followed the progress of either the lab program or QUILL, so there was no further interest or assistance from anyone at the district level.

Building Characteristics

The Heath School is a citywide magnet school with approximately 300 students, located in a working class area of the city. The ethnic makeup of the school is similar to that of the district as a whole: 75% minority and 25% white students. The students come from working class families in four different areas of the city. The school consists of one kindergarten class and two classes at each grade level one through five.

The Heath School's principal has been at the school for twelve years and is considered by both teachers and parents to be concerned and supportive. However, his interest in any activity involving computers was essentially nonexistent. He remarked, "I'm not one of those principals ready to jump on the computer bandwagon. Somebody will have to prove to me that this computer thing is more than a fad." Thus, though he did not block the teachers' efforts to establish computers in the school, he was

not committed to the implementation or success of either the general computer program at the school or the QUILL project. This principal considered the school's primary objective to be raising the students' math and reading achievement test scores up to grade level. The school had been quite successful in this, and was one of the top schools in Seaburg the previous year.

Assistance and Support

Aside from release time and permission to attend training, the QUILL teachers received very little assistance and support at the beginning of the project. As noted above, neither district personnel nor the building principal were particularly interested in the project. The other potential source of assistance, the local facilitator for the Heath School, presented some unusual problems. Though this facilitator was computer-knowledgeable and familiar with the goals and activities of QUILL, she was in an awkward position because she was the parent of a child in one of the QUILL teachers' classes. Thus, she could offer help and advice with hardware problems but was not seen as possessing the classroom expertise to make curriculum suggestions. Also, since she was not easily accessible during the school day, she saw the local facilitator function as belonging to Frank, the teacher who was most interested in and comfortable with QUILL. This combination of factors led to very little communication between the local facilitator and the teachers.

Mary Keith

Mary Keith was a third grade teacher with 21 years of teaching experience. She had little interest in or experience with writing even before QUILL training, and her emphasis on teaching basic skills in math and reading fit well with the school's priorities. Her primary incentive for participating in QUILL was her interest in becoming certified as a computer teacher in the Seaburg Public School system. Mary had taken a few computer courses in the previous five years, but seemed uncomfortable with the hardware despite this experience. Although she was one of the writers of the school's computer proposal, she explained that she had not been particularly interested in QUILL but wanted the whole school to be exposed to LOGO. She saw the usefulness of the computer related more to math activities than language activities. Though Mary saw QUILL as a vehicle for promoting computer literacy, she felt that the LOGO activities students did in the school's computer lab were more appropriate and helpful. All these factors contributed to her very low level of commitment to the QUILL program at the end of training.

Since the principal was uninterested in what happened with

QUILL and the other teacher Frank Bilder was involved with other classroom problems, Mary got very little encouragement or support for her use of the program. Without this, with her own low level of commitment to the program, and with the general school focus on basic skills, her initial implementation level was very low. Even after the training, Mary did not know the program well enough to pass it on to her students. At one point early in the year, she tried to practice editing commands with some of her students gathered around the computer. However, since she herself became "hopelessly confused", she gave up trying to teach these commands to her class and said she never did anything more with them. Mary also felt that the program directions were too difficult for her 3rd graders. These negative feelings about QUILL led her to introduce the program to her students very slowly and to use it as a "supplementary" activity. Throughout the year she claimed, "My biggest problem is trying to find time to get it in. Most days I don't even turn the computer on." Mary received few rewards at this early stage, either from within her classroom or from outside. She acknowledged that her students did like it a lot. However, because they used QUILL so rarely, students never really knew what they were doing and consequently needed help at the computer. Their interruptions disrupted Mary's work with the rest of the class, and the program came to be seen as sometning that interferred with the "real" work in the classroom.

Despite her problems with the QUILL program, Mary never sought help from Frank or the Local Facilitator, nor was any assistance offered. Visits from the researcher prompted some activity at the computer, though this usually consisted of a couple of students showing how they could turn it on, insert disks, and read something they had entered in the first months. However, QUILL use continued to decline over the course of the school year until it stopped altogether.

Mary felt that her teaching of writing had not changed during the year. Students continued to do all writing individually and turned it in to her to be corrected. The assignments were usually one paragraph on a particular topic, using specific words Mary had listed on the board, or based on pictures she handed out to the class. Since she had not implemented QUILL in her class, Mary was not influenced by it to change this method of writing instruction.

Frank Bilder

Frank Bilder, as one of the primary instigators of the school's computer programs, was extremely interested in how the computers were to be used. He had become intrigued by computers two years before "because it was the new thing to get into." He

served as the computer facilitator in the Heath School building and considered himself responsible for the QUILL project and the school-wide computer program. Frank also hoped to expand the QUILL program to another classroom in its second year, and planned to write another proposal for funds for this purpose.

Since his own commitment to QUILL was high and he had a flexible management style in his classroom, Frank's initial level of implementation was quite high. In the first months of the project, his 4th grade class used the QUILL Mailbag to write letters to Frank, each other, and other teachers and students in the school. Frank also assigned writing projects in other subject areas that the students entered into the Library.

Frank felt that the first weeks with the computer in the classroom were a bit hectic, but resolved the problems by posting a schedule near the computer. He assigned pairs of students to work together for twenty minute periods all during the school day, so each pair got to the computer at least twice a week. Frank said that he had to adapt to the idea that when he was teaching a whole class lesson two of the the students were working at the computer. However, he arranged the computer schedule so students did not miss the same class all the time. He also realized that the students were doing valuable learning as they worked at the the computer. With such regular use, students became quite facile with the programs, and were enthusiastic about QUILL and about writing.

Despite this good start with QUILL, circumstances forced the project to stop completely in this classroom in December. At that time, Frank was transferred to a fifth grade class whose teacher had been out for a long period because of illness. He moved the computer into this classroom and began again. Implementation of QUILL in this class was a bit harder to get going initially because of the disruption students had experienced during the first part of the year. However, drawing on his experience with the fourth grade class, Frank set up a computer schedule and started the students writing messages to each other in Mailbag. To minimize students' dependence on him for help with commands, etc., Frank posted charts on a board near the computer and appointed two experts to answer any questions. One of these students had spent some time in the 4th grade class taught by Frank for the first part of the year and was already familiar with QUILL. With this arrangement, Frank was interrupted very little as the class learned to use the programs. By the beginning of February the students had written many messages and he planned to assign science reports as their first Library activity the week after my visit.

Though he had put some emphasis on writing prior to the

project. Frank did modify his method of teaching writing in implementing QUILL. He tried to assign projects that would integrate writing with other subjects and planned to continue that through the rest of the year. Frank professed to use a "process" approach to writing, but seemed to believe in three clearly defined stages -- pre-writing, writing, and revising. However, he himself did not write with the students and he said he felt the process of revising to be "a tedious kind of thing." One new activity he did encourage was having students read and edit each others' writing. Each student had an editing partner who read over the first draft and marked any necessary changes. However, since Frank's emphasis in revising was on spelling, punctuation, and sentence structure, it was these errors that the students focussed on in their editing.

This class also seemed to have a promising beginning with QUILL. However, in March Frank became ill himself and the class was taken over by a series of substitute teachers. The substitutes tried to keep QUILL going using Frank's schedule, but the students were very disruptive. When the original teacher of this class returned in late April, he discontinued computer use until he could restore order. Since this teacher was not familiar with QUILL, it was near the end of the school year, and Frank did not return to the classroom, QUILL use stopped altogether.

Institutionalization

No institutionalization of the QUILL program took place at the Heath School. By the end of the school year neither class was using QUILL, and no one in the school seemed concerned about this. Since no school district personnel had followed the project's progress throughout the year, they were not even aware of its status. The principal was aware of the situation but did not take any particular steps to support Mary's QUILL use in the third grade class or to encourage the fifth grade class to continue with the project. Though Frank returned part-time in May, he was still not well and the QUILL project lost its only champion at Heath.

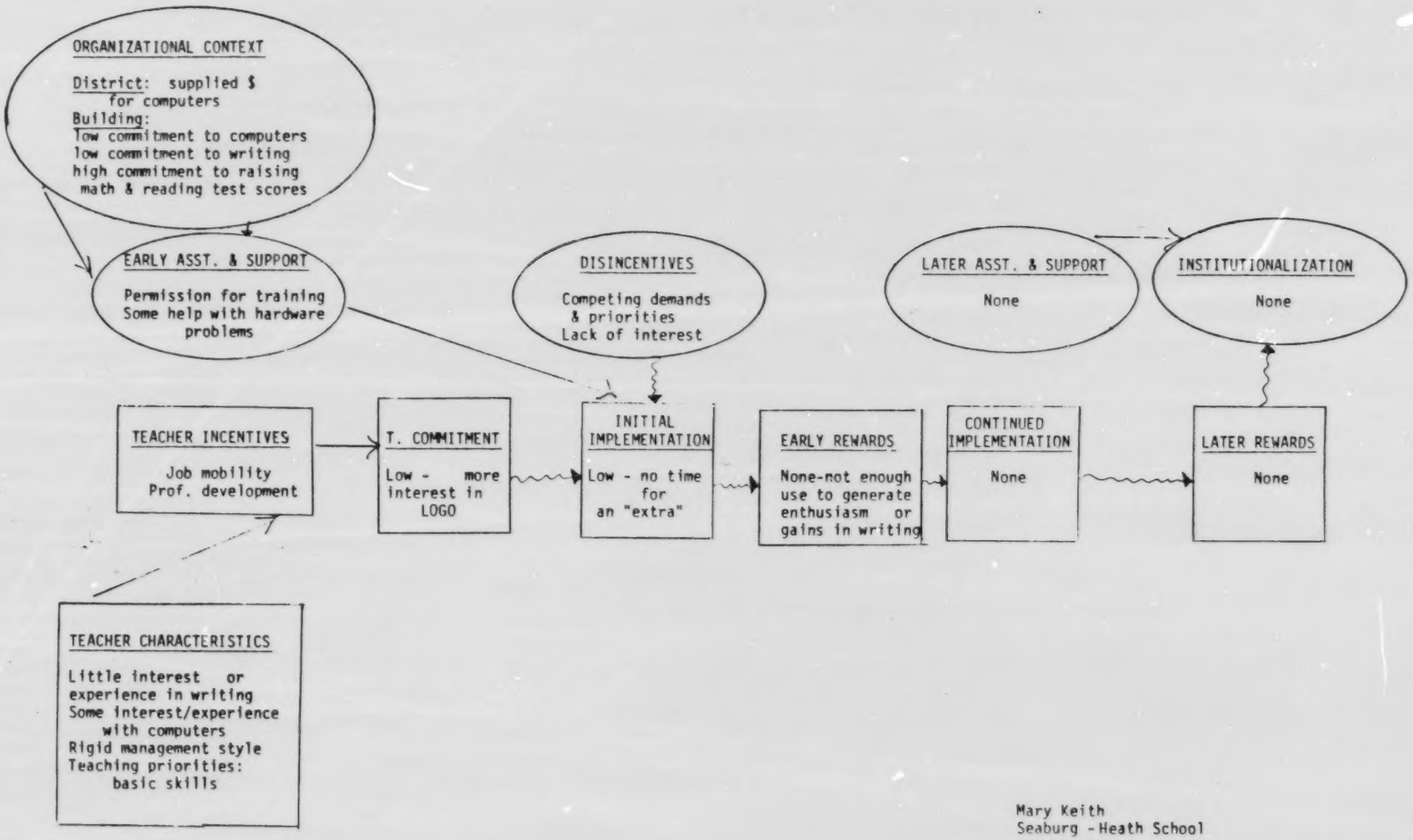
With so little support from the district, principal, and local facilitator, it was not surprising that the QUILL program was not successful at this school. Frank had sufficient motivation to become a robust user and planned to obtain funds and equipment for another fifth grade class to use QUILL the next year. During our first visit, Frank said he knew that Mary was having some problems and he wanted to encourage her to keep working with QUILL. He felt he could convince her that it would be easier as she continued using it and that by the second year it would be easily integrated into her classroom. However, his

teaching circumstances and later illness and death prevented him from carrying out these plans. In addition, Mary transferred to a different school in Seaburg for the 84-85 school year.

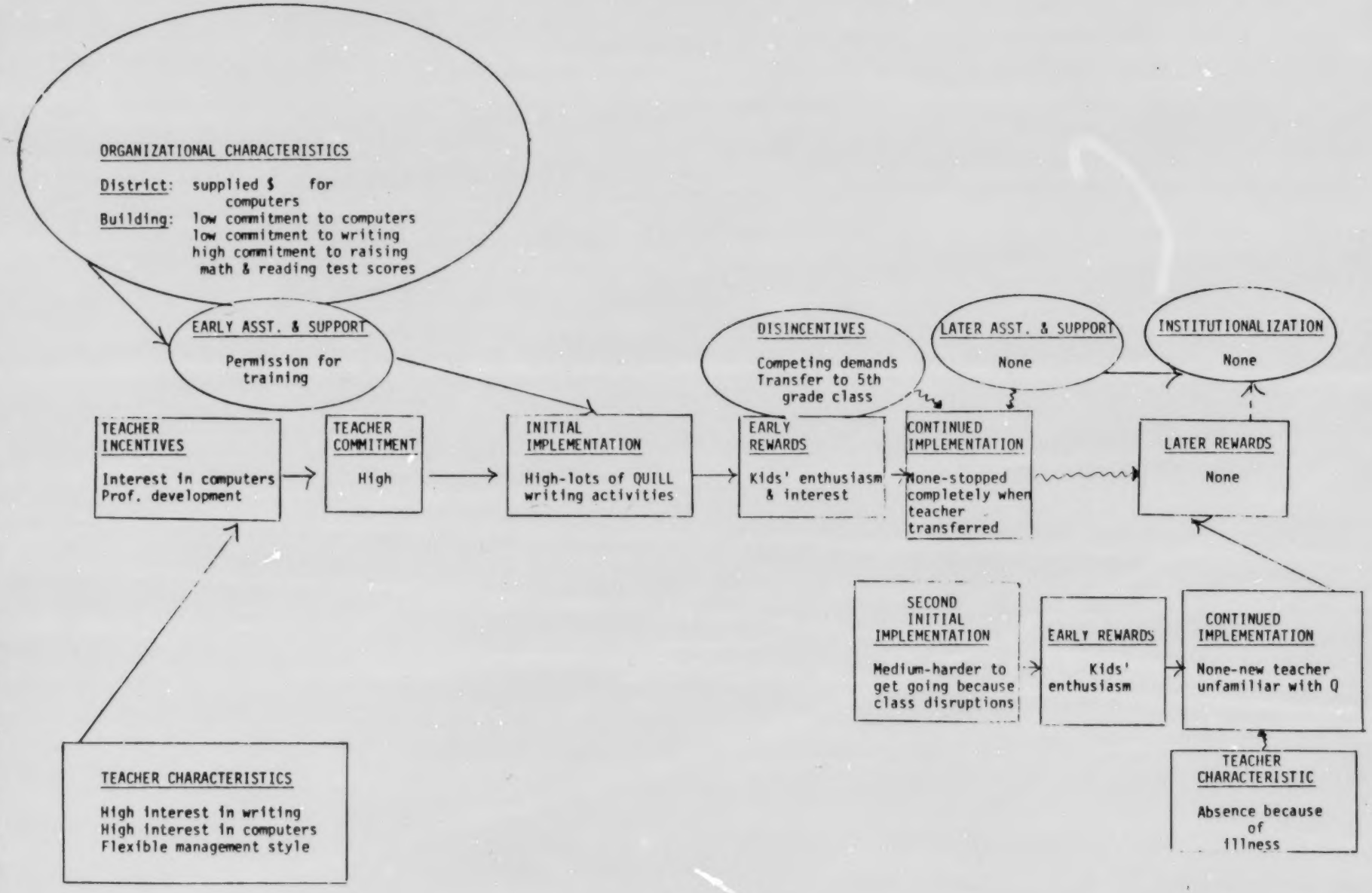
Though the Heath School's entire computer curriculum had been centered around Apple computers, both in the QUILL classrooms and the lab, the school district planned to install IBM PCs throughout the system for the next year. The Apples used for the QUILL setup were left at Heath, but the lab computers were replaced. This circumstance helped shift the focus of Heath's computer program to familiarizing teachers and students with the new computers, rather than continuing existing programs.

Thus we have seen a number of factors that led to QUILL's demise at the Heath School:

1. lack of adequate planning and support on the part of the school district
2. low commitment of the principal to computers and writing
3. competition of the QUILL project with other goals and priorities of school
4. lack of support from the Local Facilitator
5. low interest and commitment on the part of one teacher
6. circumstances preventing the committed teacher from fully implementing the program.



Mary Keith
Seaburg - Heath School



Frank Bilder
Seaburg - Heath School

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Tom Heart and Robert King
Countryville

District Characteristics

Countryville is a prototypical rural area, characterized by a small population (20,000), relative isolation from large urban centers (the two closest cities are both 4 hours away), gorgeous scenery (the mountains ten miles outside of town) and superb recreational opportunities. This ruralness has at least two effects on the school system: they know very little about what other systems are doing (even the nearby smaller towns) and they have little access to university courses (except the local Community College). In spite (or perhaps because) of this, they have adopted a goal of being a model school district (the district newspaper is called "Accent on Excellence") and many of the district administrators were finishing their PhDs at the state university in Clearfield three hours away across the mountains. The school district includes both Countryville and Pinetree, 30 miles south. There are about 300 students per grade in the district in seven elementary, three middle and two high schools.

The district hired a new superintendent for the '82-'83 school year; he made some "involuntary transfers" which left the district somewhat disorganized and nervous. Adding to this anxiety was the fact that, for the first time ever, the school budget, which must be approved by the electorate, failed to pass the first time around. In progressive budget cuts, however, computers survived as one of the highest priority items. The district created a new office of Computer Coordinator in the fall of 1982; Mary Moss, a former special education teacher finishing her degree at the state university in school psychology, took the job.

Mary saw her job as helping the district purchase computers rationally and economically, as well as setting up structures which would help teachers and students become computer literate. She also made a substantial attempt to involve the community - both by offering courses for community members and by involving parent volunteers in monitoring computer labs at each school. While she was interested in "the right way to use computers in education," she was not involved in the curriculum development effort which produced a Bank St. Writer curriculum for grades 3-5 during the summer of 1983.

The central office staff also included Leslie Harvey, the elementary curriculum supervisor; Dr. Ted Rockwell, her boss and head of both elementary and secondary curriculum; and Mark Hitchcock, in charge of testing and assessment. Some of Leslie's priorities were helping teachers establish lines of communication (she organized a teacher newspaper and an Elementary Curriculum Council) and establishing avenues

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through which teachers could be innovative in their classrooms. Mark had a special interest in evaluating writing; before coming to Countryville, he had run a state-wide writing assessment using holistic scoring and had instituted in Countryville an organized system of writing assessment.

Countryville had a fully-specified language arts curriculum, including a lot of detail about writing; it was implemented using the Macmillan English texts. Unfortunately, it was a typical mechanics-oriented curriculum with major topics: paragraphs, sentences, parts of speech, plurals, punctuation, capitalization, composition, resource materials, listening and speaking and handwriting. Tom Heart, one of the Quill teachers, described the 6th grade writing curriculum as starting with subject/predicate, sentence fragments, run-on sentences and embellishing sentences, then building to paragraph structure. He described composing activities as "supplementary." The use of holistic scoring, however, had entered the curriculum. All sixth grade teachers were giving a one-paragraph writing assignment weekly, then trading papers and marking them holistically. (It was not clear to me if the writing instruction Robert and Tom described was this weekly assignment or something additional.) Inservice workshops on writing were few and far between. The Quill training was probably the most extensive training in writing Tom and Robert had ever had; Robert could only vaguely remember one other writing workshop over the past few years.

There had been a conflict between teachers and central office over writing assessment: teachers felt it was enough for them to be responsible for teaching students to write a single paragraph; the central office (especially Leslie) felt that it made no sense to test students on writing a paragraph unless they could write more than one and connect them sensibly. Teachers perceived the writing curriculum (and the rest of the curriculum as well) as a fairly strict requirement; both Tom and Robert complained about the number of requirements they were forced to fulfill. They felt it left them little room for innovation. Leslie said several times she "didn't know where teachers got the idea that they weren't supposed to innovate."

There appeared to be little connection between the use of computers in Countryville and curriculum development. Leslie was too busy to attend to developing computer curriculum (either computer literacy or content area curriculum) and "trusted Mary" to do a good job. Computers were perceived as an "add-on" and teachers sometimes complained that they didn't have time to teach students about them. In fact, "computer literacy" was being taken out of the math curriculum and put into the language arts curriculum because math teachers had complained about being overloaded.

Mountain Junior High (on its way to being called Mountain Middle School) has an enrollment of about 900 in grades 6 through 8. It draws its student body from both a rather well-to-do area of town and the poorest area of town, populated mostly by mill workers. The principal, Bruce Leary, took on the job in November, 1984, after a short stint as assistant principal when the former principal took a central office position. Bruce seemed well accepted by the staff, partially since he had originally been "one of them" as teacher and counselor at Mountain.

Bruce knew little about computers; he was taking a course Mary was giving to find out "what kind of carts to order". His main interest in computers appeared to be facilitating the purchase of computer hardware for the next year as part of the district-organized bid.

The few computers at Mountain during the 83-84 school year were housed in the library, in a newly-organized media center which used to be a magazine area. Plans were being made for establishing a real computer lab for the next year. The librarian, Ramona, had been in charge of the computers for a while, but it got to be too much, so the area is now staffed by parent volunteers before and after school and during lunch. Only those students who have earned their computer cards by demonstrating some rudimentary familiarity with (and respect for!) computers can use the machines. The students spend their time on the computers mostly playing games, it seems; Ramona wasn't too sure what software was available. There is also a computer club which Tom Heart runs.
The computer Tom and Robert used for Quill officially belonged to the computer lab and they signed up for it each day. Since there was virtually no competition for it, however, this was almost a formality.

There was little support for writing instruction within the building, partly since much of the direction came from the district level. The English department chairperson in the building dealt mostly with 7th and 8th grade instruction. There was a separate chairperson for 6th grade who covered all subjects. Robert characterized the grade meetings, however, as dealing more with administrative details than instructional content.

Assistance and Support

Countryville was unusual because it was the only site where someone other than a Quill developer did the training. Tom Richfield, a certified trainer from Clearfield, trained both the Clearfield and Countryville teachers in December in a Benedictine monastery overlooking the Green River. In some senses he was the local facilitator, since he had attended the local facilitator workshop in Boston. Tom intended to travel

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to Countryville several times during the year to offer follow-up training. On his first trip, however, he was poorly received, since teachers at Woodlawn, the other Quill site in Countryville, had decided Quill did not fit in their curriculum, which focused on the use of Bank St. Writer. His second trip to visit Tom and Robert was never arranged because they started using Quill so late in the year.

Each school district also had its own local facilitator, as was required by the dissemination site criteria. In Countryville, this was Mary Moss, the district computer coordinator. Mary heard about Quill from Tom in the spring of 1983 when he called looking for a school district to train. She agreed to participate "on blind faith" that Tom knew what he was talking about. In fact, she thought it would teach technical writing - reference skills, table of contents, etc. - and was surprised to find it was completely different when she finally saw it six months later.

Mary saw her role as a problem-solver; "if they have problems, they can call me" , but not as a coach or curriculum developer. She felt that implementation was the responsibility of the teachers. Mary was at the training, but felt her contributing expertise was NOT in micros, but in the "instruction theory behind the program." (This seems to contradict the role she saw herself in.) She also saw herself as a liaison to Tom R. In fact, Mary's role ended up being limited strictly to helping obtain the hardware, but even in that respect, she had limited involvement and all the equipment was only brought together by late March.

Bruce, the principal, was another potential source of assistance and support who in fact offered little but equipment facilitation - and not enough of that in the end. The fact that Tom and Robert only got their Quill computer fully outfitted (including Videx card and green screen) in late March was due to some miscommunications between them, Bruce and Mary. It was never clear who had failed to follow through; the clear implication was a lack of coordination and communication.

No one else in Countryville knew anything about Quill. Both Leslie and Mark, despite their interest in writing, knew nothing about Quill beside its name. As researcher, I probably communicated with Tom and Robert about Quill more than anyone else. One concrete result of my involvement was the arrival of a green screen - the one piece of equipment missing from their set-up. My phone call to set up my second visit was the catalyst for the final arrangements; when Bruce told Tom and Robert that I was coming the next week he discovered for the first time that they didn't yet have the necessary equipment. After that, it took only 48 hours to find a green screen.

Tom Heart

General Background Tom Heart is a veteran teacher, uncommonly

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committed to his job. He had moved to Countryville seven years earlier to get away from the urban sprawl of Los Angeles. His wife, Alice, is a music teacher in Countryville. In addition to his work as a teacher, Tom has been active in the local teachers' union, serving as its president for two terms. He believes unions have improved education significantly and regrets they have gotten such a bad name.

Tom's classroom had a slightly chaotic look which reflected his diverse interests. Two snakes lived in the glass cage in the back of the room; on occasion one found his way out and wandered around the school. My introduction to the class, in fact, was observing a lesson which was interrupted by a student raising his hand to announce that one of the snakes was coiled on top of the wastebasket. The walls were covered with artwork and several "hearts" hung around the room to remind students whose class they were in.

Tom's interest in Quill came mainly from his curiosity about computers. Several years ago, he had begun to subscribe to computer in education magazines and had his own micro at home. He had done some extensive thinking about the role computers could play in education and had a dream of a more individualized classroom where bright students wouldn't be bored and slower students wouldn't be frustrated. . He wanted an opportunity to use some well-planned curriculum software, not a tutorial. In the long run, Tom would like to be more involved in the field of computers in education. While he doesn't want to program, he would like to work designing a curriculum which would make good use of computer resources. When Mary asked him in the spring of 1983 if he would like to try out a new computer writing program, he jumped at the chance without really knowing much about Quill.

Writing Instruction Tom has five periods a week to teach English; he used about half for actual writing and half for teaching mechanics from the book. He felt that so much teaching of mechanics was mandated that he spent less time on composition than he would have liked to.

Tom's approach to writing instruction was a mixture of traditional and process techniques. He begins writing assignments with some prewriting activities. He may provide an introductory statement or sentence for a story, then ask students for related words which he writes on the board. An example "story starter" is "I heard a strage sound and peered out the window and there was a bright green glow on the grass." He reminds the class that a story must have a beginning, middle and end every time they write. After these discussions, everyone (including Tom) writes for a short time until the end of the period; the next day they have another period to compose.

During composing time, there is at least 10 minutes when Tom asks the class not to disturb him. During that time, he is writing on the

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same topic they are. He tells the class he likes to write and doesn't like to be disturbed during writing (this is all true). He insists that this time can't be used for anything else; if students finish their compositions, they are to read what they've written and "enjoy it." After this period, Tom is available to students who want help or who just need to know that what they've done so far is OK so they can proceed.

Tom does not have them take their compositions home; all composing and revising is done in class. The third day, they begin to revise their drafts, which have been written on every other line. To inform the revision process, they read their draft to a partner, focusing on the way things are said rather than on grammar or spelling. Tom asks students whose drafts are satisfactory to put in describers for nouns to "make it more colorful." The next day, they circle all the words whose spelling they want to check and use the dictionary to make corrections. Finally, they rewrite the piece. Tom, himself, is very aware that a composition is never "done;" his recent programming experience has made this especially clear to him and he has emphasized it to this class.

This process takes about a week for each composition. When the pieces are finished, Tom asks if anyone wants to read his or her story to the class; usually, about half of the students will do so. Some students ask Tom to read the story for them. In order to provide students with other opportunities to share their work, he sometimes puts finished products into a booklet or on the bulletin board. Other assignments include interaction among students. A recent assignment was for students to act as aliens from another planet who could observe well but couldn't draw. They were to describe an animal they saw on their exploratory mission. The next day, they were artists who drew animals from other people's descriptions. Tom feels students learned a lot about precise description from this project when their animals emerged with parts that weren't attached to one another!

Another interactive assignment asked students to write an emotion on one side of the paper and to write a dialogue or a few paragraphs on the other side which would evoke the emotion word. Students would read their compositions to the class to see if they could guess the emotion word. Tom relates this assignment to reading assignments, asking students to try to figure out why an author might have written a particular piece.

Tom marks papers by focusing on one particular aspect of mechanics each time, e.g. spelling, describing words, punctuation, complete sentences etc. He uses two grades - one for mechanics and one for neatness and handwriting. He may, in addition, make some positive comments about the content of the piece. Tom doesn't make much use of persuasive writing, writing addressed to particular audiences (outside of the classroom) or content area writing.

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Early Reactions to Quill Even before he started using it, Tom anticipated several advantages in working with Quill. He believed Quill would make it easier for him to deal with some errors kids make because their handwriting would not be a problem. He saw the opportunity students would have to make changes as a potential advantage, but hoped that revision on the computer would not be bogged down by technicalities of the text editor. His limited experience with the Bank Street Writer showed him that kids often don't take advantage of the text editor's revision capabilities; he suggested it's "like pulling teeth" to get kids to revise.

Tom had already figured out a schedule for getting students to use the computer. He was concerned about finding a way to keep track of what part of the program they had used, especially as kids got out of synch due to absence,etc. He thought that having students work at the computer in pairs would make it easy for them to make up what they had missed because the partners could explain it to one another. He was somewhat concerned that some groups would not be able to finish their Quill assignment in the allotted time, so they would fall behind and miss some assignment. Tom anticipated that with Quill, two to four kids would be busy at the computer during language period and miss whole group instruction. He was not yet sure how he was going to handle that problem. He had already introduced the Mailbag concept to his class, even though the computers had not yet arrived. He anticipated their excitement about this program would provide motivation for beginning to use Quill.

Early Assistance and Support The next two months, from January to March, were filled with frustration for Tom. First, he discovered they had only one system with two disk drives. Then, he found out there was no 80-column card. The technician who installed the 80-column card told him the computer would overheat, so he ordered a fan. Bruce, the principal, at first refused to order a fan because he had heard it would pull dust particles into the machine. Finally, the machine was ready - when they discovered their color monitor wouldn't work with an 80-column card. At this point, communication broke down altogether, and Tom got too busy with teaching to bother with the equipment any more. Only my phone call changed the situation, as Bruce and Mary realized that the program was stalled.

Tom's interpretation of this lack of support comprised two aspects: first, he wondered "if anyone really cares what's going on here." Second, he explained that he didn't know who to talk to when the equipment problem arose. Normally, he goes to the sixth-grade chairperson for help with problems, but she wasn't at all informed about computers or Quill. He suggested that someone else should have been

taking the initiative to check on the program.

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Early Quill use Tom began to use Quill at the end of March. Following the Cookbook, he started by using Mailbag. He wrote three messages to class, asking them to 1) sign their name on a list in the front of the ro front of the room, 2) sign their name on a list in the back of the room and 3) write one sentence to "your favorite teacher." He felt it was going quite well, with writing going slower than reading, since it required more complex manipulations. Tom was concerned as well about the students' lack of keyboarding skills; he worried that the skills they developed would be inefficient.

Tom had kids using the computer in pairs, which he felt speeded up the process, but had found a few pairs that didn't get along too well. He commented that his schedule this year allowed all students equal access to the machine, in contrast to last year, when the most aggressive students monopolized the computer. He noted that some of the students who complained this year that they hadn't yet had their turn were those who normally don't want to write a sentence. In spite of the lack of support, Tom still seemed committed to using Quill and was finding his efforts rewarded by his students' enthusiasm.

About this time, Tom also mentioned that he was interested in being a computer resource person at Mountain, keeping track of the relationship between software and curriculum and running the computer lab; he was informally looking for money to fund such a position.

Continued Quill use During the last two months of school, Tom continued to use Quill. His students exchanged messages with both Tom and one another, working in pairs. Tom observed several disagreements among the pairs on content of the messages; the result was often that they would erase everything they had written, thus taking a long time to complete their message. In addition, they read sample game reviews which Tom put on a Library disk and composed a short review on the computer. Students worked on Library in groups of three, using Quill a half hour every two weeks. Tom noticed that in these slightly larger groups, fewer conflicts over the content of the text came up.

Rewards and Teacher's Attitude In the end, Tom found Quill to be frustrating because of his scheduling problems. While his original hypothesis that students would be drawn to such a computer activity was validated, he said he would not use Quill again in a sixth-grade class in Countryville. Since sixth graders in Countryville spend only a few periods a day in their homerooms, Tom never had more than one period in a row with his homeroom students. (Actually, some days he has two, but one is taken up by spelling activities which he feels obliged to do.) Even that one

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period is broken up, since he wants to take the first 15 to 20 minutes for whole-class discussion. With 32 students in the class, he felt it was just too frustrating to have something like Quill available, but be unable to really use it. He considered this lesson about scheduling an important contribution to his understanding of the role of computers in education. He plans now to be teaching third grade next year and predicts it will be easier to use Quill in that self-contained classroom.

One of Tom's proposed solutions to the scheduling problem was to make Quill the language arts curriculum, telling teachers they didn't have to be responsible for all the other parts of the curriculum they now spend time on. In fact, Tom is afraid that computers are not going to be used much in schools because teachers feel pressed to meet curriculum demands "measured by the thickness of the textbook;" if the computer is not officially correlated with the curriculum, he predicts teachers "will just plod along."

Even with this frustration, Tom felt that his students had had a worthwhile if limited experience (as evidenced by the fact that he hoped to use Quill in his third grade class the next year) and that he had at least one new insight into teaching. He observed a surprising amount of interaction among the students about grammar and mechanics in their collaborative pieces and discovered that they tended to be more correct than pieces written by a single student. He was impressed, having never tried this kind of collaboration before, and felt each student was learning valuable skills from the social process.

Robert King

General Background Robert is one of the many people who came to Countryville originally because of the superb recreational opportunities it offered; in particular, he wanted to be able to downhill ski, as he had skied professionally for several years. He taught 7th, 8th and 9th grade for two years when he first arrived and has been teaching 6th grade for the last six years. Robert has a special connection to writing because he is a novelist; he appreciates the power of word processing first-hand, being a dedicated user in his own work.

Robert never really knew what he was getting into when he expressed an interest in Quill. Tom had asked at a faculty meeting, "How many people would be interested in looking at a computer writing program next year?" Robert thought everyone would volunteer, but he was the only one. At the time, he really thought he would be just "looking at" Quill. His motivation was primarily his interest in computers as communication devices; he felt the experience would be valuable both for himself and his students. He emphasized that he wasn't looking for "recognition" and

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pointed out that his paycheck was exactly the same as it had been before Quill.

Writing Instruction Robert gives his sixth graders a writing assignment once a week, expecting that it will take 2 to 3 days to draft and edit it. He includes a prewriting period as well. A sample writing assignment would proceed as follows: Suppose the assignment were to write about "the best possible pet." First the class as a group would list nouns, describers and action words pertaining to pets on the board. Students write at least some of these suggestions on their individual word collecting sheets. (This was a technique Robert picked up at the Quill training.) Then students have three sessions to complete their pieces. The first is a drafting session; those who do not finish a draft in school must finish it at home. The second session involves editing; each student has an editing partner and they trade papers to check for problems. Robert has drawn up an editing form which tells students to 1) listen to partner read his/her composition 2) tell partner what you like and why; suggest and discuss improvements (Robert also fills in a particular aspect of the piece to pay attention to for each assignment) and 3) read your partner's composition, marking mechanical errors. When Robert grades the papers, he uses a form with 17 possible "areas needing improvement"; the areas are divided into content, mechanics and format. Students are allowed to rewrite any paper to improve its grade.

While students are writing, Robert walks around the class and tries to help students in both drafting and editing. He feels a limited vocabulary can be a big hindrance to kids in writing and talks about kids who can't find an alternate way to say "the dog is black." He worries that they don't have enough interest and pride in their work to put an effort into finding a better word. Robert has attempted to teach revision strategies on an individual basis, but feels he hasn't mastered teaching "writing style." While he is comfortable with teaching the technical aspects of writing and "what a decent sentence is," Robert asks, "How do you teach someone to write like John Steinbeck?" He answers his own question, "I'm not sure you do."

Robert has given his class more expository assignments than fictional ones. Their writing experiences have included both friendly and business letters and reports. Robert makes an effort to find real contexts for his letter-writing units and will suggest situations such as ordering a product, complaining about a product, or writing an editorial about a problem school. He reports that his students like report-writing units; he likes them because they are longer projects (occupying a couple of weeks) which involve "more than just writing." Another of his favorite

assignments is one that demonstrates different points of view. The class reads "Flowers for Algernon," noting how the character's point of view changes as his intelligence changes. Afterwards, students write from different points of view (e.g. from that of a dog or a pencil).

Robert gives his students many opportunities to write in science and social studies. In science, for example, students need to do a few extra credit projects to earn an A or a B; several of the possibilities involve writing. In an energy resources unit, some of the suggestions were: write the autobiography of a river; write an essay, agreeing or disagreeing with this statement: "Man is the dirtiest animal."; explain how electric eels convert energy.

Robert tends to teach whole class lessons primarily, but he provides many projects for students to do individually, in pairs or in small groups. Science experiments and social studies construction projects are particularly appropriate for this kind of arrangement.

Early Reations to Quill Robert adopted a "wait and see" attitude toward Quill; he had no concerns about the first few lessons, but he was worried about the students' having difficulty with the word-processing commands. He felt some of the Cookbook lessons would take 10 minutes per pair at the computer, while others would take 30, and was concerned that is would be difficult to come up with a consistent schedule because of these differences. Robert experienced the same frustrations with equipment delays as Tom.

Early Quill Use Robert started, as Tom had, by writing a message to each of the five groups in his classroom; the content, by his own description, was "Get with it." He sent the same message to the groups "boys" and "girls"; students tended to read the message several times by trying different group names. For the next lesson, he requested that they send him a message. Several of the messages included comments about school (e.g. his practice of writing the day's schedule on the board) that probably would not have been communicated otherwise.

Continued Quill Use Like Tom, Robert put a few sample reviews on a Library disk and had his students read them. The class then composed a planner for reviews. At this point, the software started to act up and Robert lost two weeks of Quill use. He never considered calling Mary, the local facilitator, since he assumed she wouldn't know any more than he and Tom. He had been having some trouble getting the computer (especially the printer), so his class hadn't always been able to use Quill. Because the students were still at the point where they needed help to use Quill,

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progress was sometimes slow, especially if Robert were busy teaching other students. He was disappointed that he hadn't yet gotten to teaching students all the editing commands.

Rewards and Teacher's Attitude By the end of the year, Robert was already looking forward to next year, hoping he would be able to start using Quill at the beginning of the year. He was convinced that if the students got to know the system, it would be "wonderful." He commented that he would like to give Quill "a fair chance." His main concern was that demand for the computers would increase to the point where he would be unable to have the computer when he wanted it. If he had enough time, he would like to do some problem-solving activities with the computer along with word processing.

In general, Robert did not feel his teaching style had changed as a result of using Quill. He felt, instead, that is matched what he had been doing quite well. He had always included prewriting, used editing partners and searched for real contexts (especially for letter writing), so he regarded Quill as a tool for implementing a style he had already established. Robert had already planned some new Quill activities for next year. He wanted his students to use Mailbag to write to kids they didn't know (e.g. from different elementary schools) and was interested in using my contacts in Alaska. He also wanted to use Quill at a learning fair where a group of school projects were displayed. His plan was to have Quill available for people to "give us a piece of your mind" - comments on individual projects, the entire school etc. - using Mailbag.

Robert always had some tidbit to share about word processing. Once, he reported that "professional writers were raving about word processing," another time, he said he had heard that 500 papers on writing and word processing had been submitted to an English teachers' conference. Most of them reported that papers written with word processors were longer and more likely to be on time.

On the topic of assistance and support, Robert was quite explicit. His tendency is to go to a friend or colleague when he wants to talk about teaching; he seldom turns to the principal or central office staff (of whom he was quite critical in general) for advice. True to form, the chart in his room which reminds students where to go for help lists "ask friends" before "ask teacher."

Institutionalization

There was no evidence of institutionalization of Quill in

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Countryville. It seems that any spread of the program would have to come from Robert and Tom's showing it to other teachers. Quill was scheduled to be presented by one or the other of them at the computer fair in the fall. Mary, who would have been a force in any institutionalization steps, asked me in May if I thought Robert and Tom would be using the program the next year! Robert, in fact, did use Quill during the next school year and, in passing on this information, Mary also commented that he was involved in a sixth-grade curriculum committee and wondered whether he would try to get it into the curriculum. At the same time, she asked me if I knew anything about a new word-processing program she had just gotten a good deal on. Some of this laissez-faire attitude was an attempt to allow teachers to make their own decisions on curriculum, but it sometimes extended into a kind of non-support which made them feel their attempts at innovation were not appreciated - and, in fact, frowned upon.

At the end of the school year, Mary was trying to figure out how to put 2 1/2 weeks of word processing into the 7th and 8th grade curriculum; she was willing to show Quill to the curriculum committee and consider it as one possible candidate. The plan was to put the word processing program they were taught into the library after the 2 1/2 weeks were over. I was dubious of the use of doing that and hinted that the decision "depends on what your educational goals are." But Mary responded, "It's not what our educational goals are; it's what we have the hardware to support." This statement seemed to capture the lack of substantial connection between Countryville's computer policies and their curriculum development.

Update

In January, 1985, Countryville was struggling with an even worse budget crisis than they had been in 1984. Ted Rockwell, the head of curriculum, had left and not been replaced. Mary Moss, the computer coordinator, had no secretary and no boss. It was possible that her job was going to be discontinued and she talked about leaving the district to find a decent job. In general, there were fewer people in the central office and certainly less good energy.

On the other hand, Robert's classroom scene looked good. He was using Quill and declared it "much better this year." He had used Quill the first quarter, taking advantage of having three periods in a row with his class. During the second quarter, he used LOGO with half of his class at a time in the lab. He intended to use Quill again the third quarter, including sending letters to students in Alaska. He pointed out that it made all the difference in the world to have started Quill in the beginning of the year so that students really had a chance to master the editing commands.

Robert reported that Mountain had received several more computers, so he still was not having any trouble reserving one for his class. He certainly was using the computer more for instruction than any other sixth grade teacher (especially now that Tom was teaching in a another school). Most of the other teachers, he said, used a computer for record-keeping, if at all. One computer class was begin taught to the older students; it focused on LOGO and word processing and was taught by an English teacher.

In the meantime, Tom had been transferred to another school and was teaching third grade (at his request). This school had a lab with 11 computers; Tom was using it with his class for computer literacy, keyboarding, LOGO and math games. He was concentrating most of his energy on LOGO. The school is going to use Bank Street Writer in the lab and Tom will be the contact person. He is still pursuing his plan to integrate computers more tightly with his job; he would like to be tghe computer resource person in the school and is planning to write a proposal for funds to support the position. (Possible sources for funds include Tektronix, which has just opened an office near Countryville, and Fred Meyer.) If and when he became such a resource person he would try to use Quill. As it is now, he feels the school is committed to using computers in a lab setting, so no computer is free to be used in a classroom.

Tom finds third graders a new challenge; he likes their inquisitiveness, but misses the problem-solving skills of older students. In fact, he admits that he doesn't know how he would use Quill with third graders.

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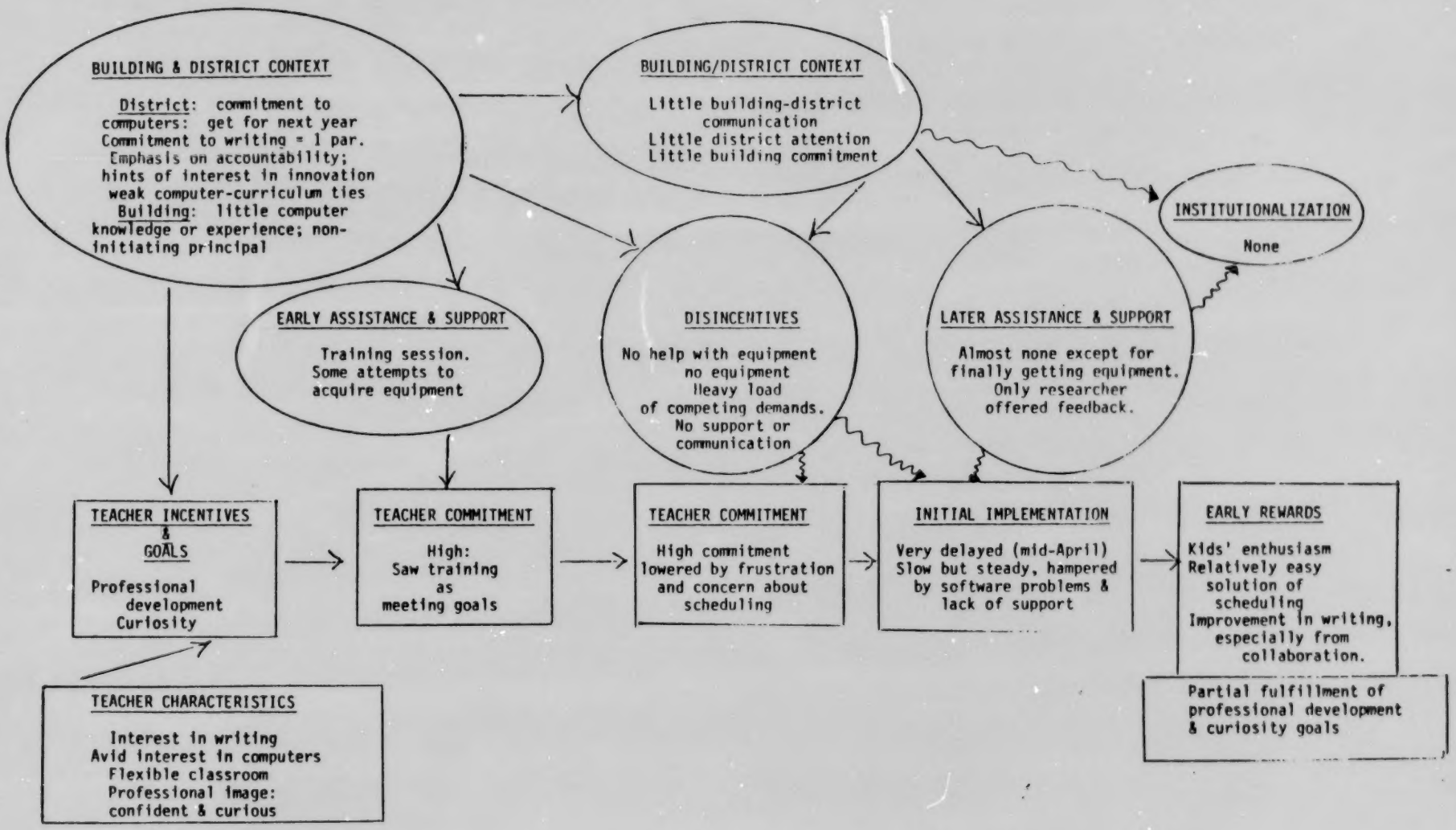

Tom Heart - Countryville

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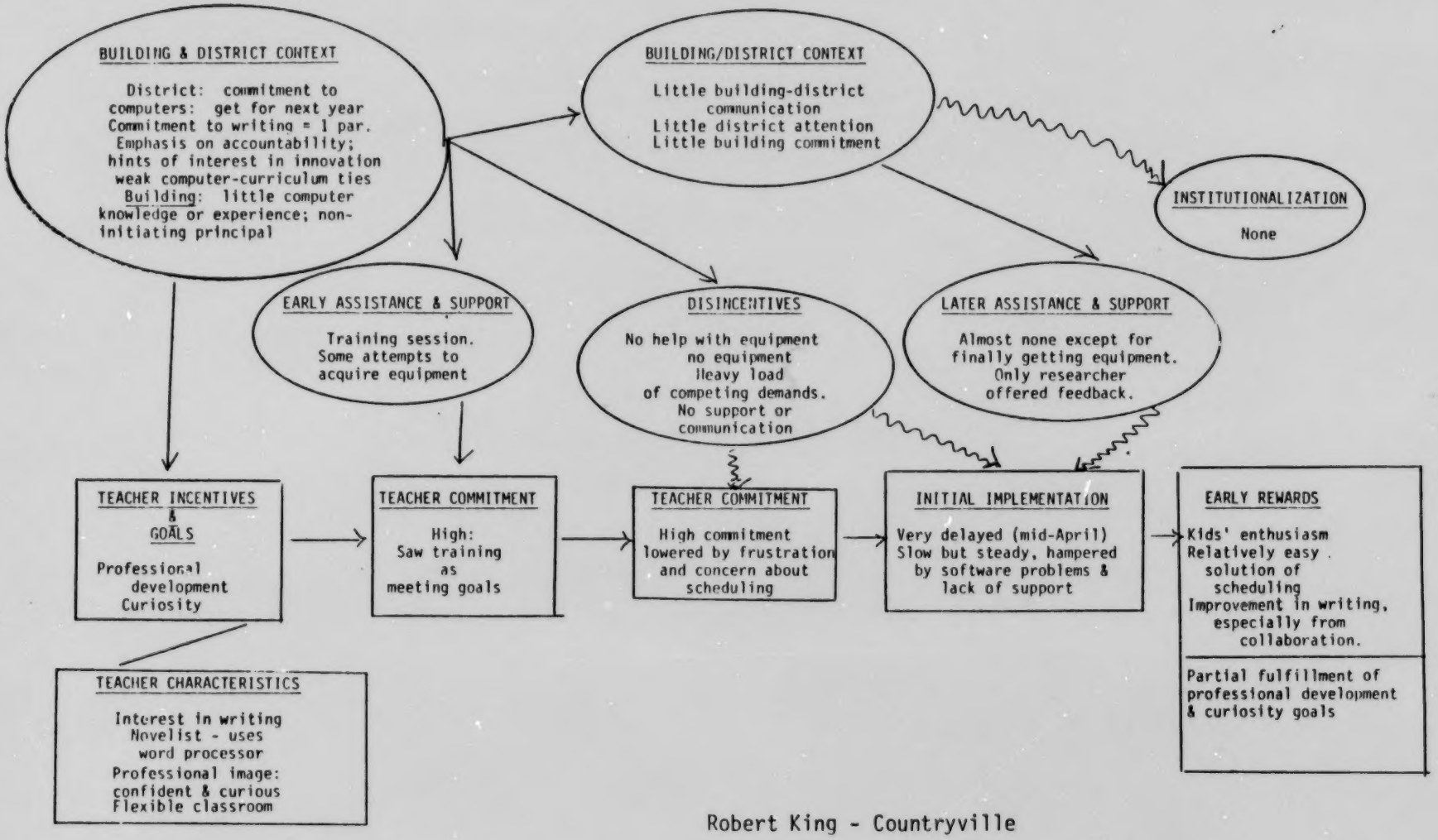


Robert King - Countryville

Beechwood/Rowley

Gretta Heller and Lucy Porcello
Esther Borelli and Janet Vandermeer

District Characteristics

The Beechwood/Rowley School District, comprised of two townships, is located one and one half hours west and just outside a major northeast metropolitan area. The district is bisected by Rte. 22, creating an actual physical boundary between the two towns, Beechwood to the north and Rowley to the south. The district as a whole is socio-economically diverse and could be considered typically suburban, but each town has a distinct profile. Beechwood is comprised mainly of upper middle class professional families, while Rowley is largely lower middle to middle class, a working community with a large, first-generation Italian population. Not surprisingly, there is some tension between the two towns and the school district makes a effort to distribute its resources equitably between them. Parity amongst the schools is a district goal.

There are a total of 6000 students in the district, but the school population has shrunk over the years. Many families have children who have grown and left the community: the schools once served 12,000 kids. Although two elementary schools have closed in the last two years, the current population is considered to be fairly stable. There are few Blacks or Hispanics in the district but there is a minority population of Asians: Vietnamese and Indians. The district provides ESL classes for those students who require them.

The school district was in a state of administrative flux at the time of this study. The superintendent who had served in the district for 17 years had left a few years earlier, and since his departure the district had been through six different successors. The assistant superintendent's position was still unfilled. This was of greater importance to the writing program, since the assistant superintendent is in charge of curriculum at Beechwood/Rowley.
Beechwood/Rowley is large enough to have a significant number of administrative personnel; for example, there are five people in Curriculum and Instruction positions in the central office. Curriculum decisions are made at the district level; however, curriculum proposals may be introduced by any faculty or administrator, and final decisions are made by a district curriculum committee which includes both.
Beechwood/Rowley had recently shifted from a line-item to a zero-based budget, so district funding was in an uncertain state as well, but budget cuts were certain. In spite of this there was consistant district support for expanding the computer curriculum. This may have been due in part to the

make-up of the school board, at least half of which had jobs in advanced technology or used micro-computers regularly in their work.

The district takes staff development fairly seriously. Every teacher is allowed two professional days each year and more release time can be arranged for special projects. (Teachers were given release time for QUILL training.) The district itself offers twenty inservice courses, including three levels of microcomputer instruction, which accrue salary guide credits for teachers who take them. Teachers are reimbursed for graduate level courses at Rutgers University, and can apply the cost of tuition at Rutgers to more expensive university courses. Salary guide credits are awarded for this out-of-district work as well. Teachers and administrators do take advantage of these staff development opportunities. This seems particularly to be the case with computer courses.

Beechwood/Rowley was originally chosen as a field test site for QUILL because of its connections to the Bay Area Writing Project -- (a nationally validated and disseminated writing project) and the presence of a strong district level administrator with a lot of interest in the composing process. Maureen Price pointed out that even before QUILL arrived, Beechwood/Rowley was a "writing process district". She said that any language curriculum the district adopted would involve a lot of writing, and that it would be hard to find a teacher in Beechwood/Rowley who didn't emphasize writing in his or her language arts instruction.

Maureen attended all QUILL training sessions in the first year of implementation, published an article about QUILL in the district's semi-annual school board bulletin, and set up a formal comparison between QUILL and two non-computer classrooms, in one of which a new language text being considered for adoption was in use. This internal comparison was initially requested by the board of education, who pointed out that large hardware expenditures might not be necessary to improve classroom writing. Results from Maureen's evaluation suggested that students using QUILL showed more improvement than either control classroom. The differences were particularly evident in expository writing and in comparisons between the QUILL group and the group using the new language text, which placed a strong emphasis on grammar but little on composition. Toward the end of the school year the district decided to extend QUILL to all 4'th and 5'th grade classrooms and to purchase the required hardware to make this possible.

(It is not clear how much this decision was influenced by Maureen's evalaluation report. The school board got a lot of first hand information about QUILL that year in addition however, as the two teachers who piloted QUILL the first year

made a formal presentation to them about their experiences, and one board member's son had been a student in one of the QUILL classrooms.)

This study followed four teachers through the district's first major implementation effort: the two pilot teachers, who were then in their second year of QUILL use, and two other 4'th grade teachers from the same schools who were using QUILL for the first time that year.

In both years the Beechwood/Rowley teachers implementing QUILL had the support and assistance of their school's Curriculum Reading Specialist. This position had been established by Maureen several years earlier to help implement changes in the language arts curriculum. Thus the two CRS' were involved with QUILL implementation from the start. They did have other responsibilities as well; notably those relating to the introduction of a new language arts text series the same year QUILL was adopted in the 4'th and 5'th grades. But they were in a good position to help teachers integrate these two new "tools" into an overall language arts curriculum, and spent a lot of time with that task during the year. Moreover, the CRS' worked directly under Maureen and she had established QUILL as a curriculum priority, so it should have been their curriculum priority as well.

In the first year of QUILL use the CRS' attended the initial training session with Network trainers along with the pilot teachers, then spent several hours a week in their school's QUILL classroom until the students were familiar with the system and the teachers felt comfortable with classroom management issues. In the second year the CRS' themselves took part in the QUILL training, which involved all 4'th and 5'th grade teachers, as well as some Basic Skills, science, social studies and high school teachers, and elementary media specialists. Obviously it was impossible for the CRS' to spend as much time with each teacher beginning QUILL the second year as they had with the pilot teachers the year before: their target group had increased eight-fold. QUILL teachers dealt with their assistance needs somewhat differently in the second year. First, the pilot teachers -- now considered "veteran QUILL users" -- became resource people for the entire 4'th and 5'th grades, and spent two weeks at the beginning of the year in training sessions and floating from class to class to help with introductions and demonstrations. Second, the new QUILL teachers were able to use each other as resource people, and did do a lot of talking amongst themselves about all aspects of QUILL implementation. Finally, the substance of the CRS' assistance changed somewhat. Rather than spending regular blocks of time in each QUILL classroom, they became more generalized trouble-shooters, to whom teachers could appeal for help when they encountered problems they could not solve.

They regularly attended the teachers' weekly grade-level meetings to discuss any QUILL-related problems, took care of all mechanical problems with the m-c's, and copied and dispensed new discs when needed. In general the CRS' were the people in their buildings that teachers knew they could call upon at any time with any problem relating to QUILL.

In addition the CRS' maintained an overview of the implementation process in their building, trying to keep teachers moving onto new applications of QUILL and anticipating when particular teachers might need special attention or encouragement.

It should be noted that in no other QUILL training site was there anything approaching the level of hands-on support which the CRS's provided QUILL teachers at Beechwood/Rowley. This should be kept in mind when comparing the relative success of QUILL implementation in different districts.

Maureen, in contrast to the CRS's, monitored QUILL implementation at the district level. While she stood at the apex of a telephone pyramid for QUILL problems and actually ran the training session for the 5'th grade teachers, she was not generally involved in day-to-day issues of implementation and support. Her position in the district's Curriculum and Instruction Office was removed from that level of engagement, and her personal style did not lend itself to on-the-ground assistance. Instead, she monitored QUILL implementation district-wide on the basis of its fulfillment of district writing goals, gave support and guidance to the CRS' involved with QUILL, and kept the school board apprised of the status of the project. This was significant for two reasons. It meant that her attitude toward using QUILL --"infuse it into all aspects of the curriculum -- QUILL should be as much a tool for writing as a pencil is !" -- was passed on to the teachers through their CRS', and it meant that the school board made its decisions about QUILL in large part on the strength of her documentation of it. Maureen understood the importance of "vertical integration" in the implementation of a new program and played a cruical role in the institutionalization of QUILL at Beechwood/Rowley.

One other district-wide factor affecting the implementation of QUILL at Beechwood/Rowley was the decision to adopt the new language arts textbook series in all grades throughout the elementary schools in 1983-84. The new texts presented an integrated curriculum of literature, language, writing, and study skills, and placed a lot of emphasis on the process of editing written work. While the new language text could have competed with QUILL for teacher attention and classroom time, the two programs were in fact quite compatible with each other. Since the CRS' were responsible for both, they looked for ways to integrate the two programs in classroom

use. Most teachers responded favorably to the new texts and did in fact use the two programs complementarily. Thus while the new language curriculum required additional teacher time to develop, in the final analysis it probably strengthened QUILL use as it focussed on many of the same writing processes upon which QUILL is based.

Building Characteristics

In the original QUILL study two 4'th grade teachers were chosen to pilot the program from two different elementary schools in the district, Van Ness in Rowley and F.D.R. in Beechwood. Data from this first year were used in the analysis of incentives and rewards, along with observations of these and two other teachers in the same schools during the first year of B/R's district-wide implementation effort.

F.D.R.

F.D.R. Elementary School serves 360 students in grades 1-6 in Rowley. The principal, Myron Greeley, characterizes the community from which the school population is drawn as "old world": working and middle class families, largely Italian, with many first generation immigrant households in which the kids have taught their parents English. This creates some language difficulties for the kids; as one teacher put it, "the kids in this building don't have as strong a language backgound as kids in Van Ness, for example." It is a very family-oriented community, in which parents respect discipline and respond well to the school's use of it, in general appreciate the schools' efforts, and support their PTO. Myron says of them, "The people are great; the children are good kids."

Myron was charcterized by teachers in his school as quiet, low-key, and non-intrusive, but aware of everything that went on in the school and supportive of his teachers' efforts. He said himself that he had a lot of respect for his teachers and that it was not his style to "go laying down the law" to them. Their assessment was that he communicated his building goals clearly at staff meetings but respected their right to approach these in their own style and according to their own educational agendas. His influence on the character of the school seemed subtle but distinct: he inspired and engendered respect amongst his staff and conveyed the sense that their concerns were of concern to him. As one teacher put it,"If we have a problem, the principal is there for us."

Myron had no experience with micro-computers beyond a few district inservices prior to his experience with QUILL. He was somewhat skeptical at first about the value of using micro-computers for teaching writing, and did not involve himself actively in the pilot project. He was not a facilitator of QUILL in the beginning: he dragged his feet

and had to be pushed a bit at this point. But he had a background in English and an interest in language arts, and could appreciate the kids' demonstrated writing improvement with QUILL. By the end of the year, before he knew about the district's decision to expand the QUILL program, he had agreed to purchase an Apple so that QUILL could be continued in his building the next year. Though he never became a "computer freak", he attended the QUILL training the second year, kept track of QUILL's progress in his school, was available to discuss problems (sometimes daily) with the building CRS, Francine Fraser, and made sure that any problems the teachers had were discussed in their weekly grade-level meetings. In sum, he provided sincere support but his personal level of involvement in the program was low.

Assitance and Support

F.D.R.'s CRS, Francine Fraser, co-led a three-day training workshop for all 4'th grade teachers at the beginning of the year, with assistance from the veteran QUILL-users Gretta Heller and Esther Borrelli. For two more days, while teachers were introducing QUILL to their classes, the three of them floated between the classrooms, helping out where needed. After that Gretta and Esther returned to their own classrooms, and Francine worked in a more concentrated way in one room at a time, helping individual students learn how to input their first Mailbag message while the teacher worked on something else with the rest of the class. She tried to be in the same room for two or three consecutive days during the time designated for QUILL use to be able to follow up on any problems which might arise, and tried to find a particularly interested student who could serve as an in-class resource person when she was gone.

After that, she was "on call" for teachers whenever they had a problem. She attended weekly teacher's meetings to discuss classroom management issues and how to best utilize QUILL in their daily routines, and to provide positive reinforcement for the first-time users. She likened herself to Mr. Watson, Alexander Graham Bell's assistant -- someone who would be there when the teachers needed her -- but recognized that her role was really somewhat larger than that. In fact she had assumed the role of building-level facilitator for the entire QUILL project. She felt that it was her job to keep on top of what teachers were doing with QUILL, and to help them keep moving through the program. While she did not think of herself as a supervisor and hesitated to interfere with a teacher unless she felt that s/he was really bogged down, she believed it was important to provide on-going contact with the teachers, otherwise, in the press of things, QUILL was liable to fall by the wayside. Ultimately she saw her task as that of teaching teachers how to figure out how to take the next step themselves, so they would not need to depend on her. But she felt it was important to provide a lot of

assistance and support in the beginning for them to be able to get to that point.

She contrasted her role with that of the QUILL trainers from The NETWORK who showed up every couple of weeks the year before and provided some outside pressure to keep teachers moving forward with QUILL. (Note: this is an interesting perception of the QUILL trainers. In fact, they only visited Beechwood/Rowley every 6-8 weeks that first year. But clearly the people involved with QUILL felt that they had to live up to some kind of external standard of achievement set by the trainers.) Francine felt she needed to be on more of an equal footing with the teachers than the QUILL trainers had been, keeping lines of communication open so that as a group they could support each other and develop a set of shared expectations about QUILL use. This suggests some of the different procedures necessary for implementing an innovation across the board, district-wide, as opposed to implementing it in one or two test classrooms where the pilot teachers are essentially on their own.

Gretta Heller

General Background/Early Reactions to QUILL

When Gretta was asked to pilot QUILL in F.D.R. the year before, she had had virtually no prior experience with micro-computers. With eighteen years of teaching behind her, she had a reputation for excellence, however. Myron called her "a leader among teachers." She was a soft-spoken, hard-working, enthusiastic teacher of kids. Low-key but very direct and clear with her students, she was also artistic and did a good job of inventing creative assignments which held her students' interest. Her classroom was well-organized but not regimented -- she maintained a looser kind of control that consisted of knowing exactly what everyone should be doing at all times, communicating this clearly to her students, and being able to tolerate many things happening at the same time. She had a strong professional self-image: felt capable and creative, and was always interested in trying new things. She was considered by others and considered herself something of an innovator in the school.

Early Reactions to QUILL

Gretta recognized that it was something of an honor to be asked to pilot QUILL the first year -- "I suppose they asked people they thought would do well with it" -- and was in general always excited to try new things. She started with a positive attitude toward QUILL, although she admitted to considerable anxiety about her ability to handle the hardware in the beginning.

Early Assistance and Support

Gretta was trained by QUILL trainers the first year and got a lot of assistance and support throughout the year from both the trainers and from her CRS, Francine Fraser. Francine was present when she introduced her class to QUILL originally and remained in the classroom for several days afterwards to help students learn QUILL commands while Gretta worked with the rest of the class on something else. QUILL use, especially at the beginning of the year, was limited to a small part of each day, and the writing assignments
Gretta gave were quite standard and traditional. Perhaps because of her nervousness about the micro-computer, Gretta did not use the program particularly creatively at first. She felt under some pressure to perform well from the recurring visits of the QUILL trainers, and put a lot of effort into mastering the program. This entailed a definite time commitment -- "I let some other things slide," she said. Later she admitted that this pressure had a positive as well well as a negative side, though. "It forced me to put in the time needed to really learn the program."

Early QUILL Use

Gretta characterized her class as bright and enthusiastic, although it did include six special needs kids, including one ESL student. The class had been well-prepared for the arrival of the micro-computer; they were very enthusiastic about having it in their room. Gretta's enthusiasm mounted as she became more comfortable with the software and began to see real improvement in the kids' writing. Their own excitement about QUILL was infectious. They picked up the command system quickly and really enjoyed writing assignments on QUILL. Because they worked hard to produce perfect final copies they spent more time and paid more attention to their writing, and their extra efforts paid off with real improvement.

Gretta had to contend with several software bugs in the first year, as well as work out how to integrate QUILL into her classroom routines without the benefit of other teachers' experience. She continued to get help from QUILL trainers and her CRS throughout the year and gradually worked out her classroom management problems however, and gave more and different kinds of assignments on QUILL as the year went on. Her students' continued excitement about QUILL was very rewarding to her.

Gretta and Esther Borelli, the pilot teacher at Van Ness, were asked to give an inservice on QUILL to all the teachers in the district that spring. This led to some fame within the district and invitations to speak outside the district as

well. The invitations enabled Gretta to travel around the state and "meet lots of interesting people", which she clearly enjoyed. It seemed to give her a wider perspective on her work, and introduced her to some career options she might not have considered before. She felt somewhat conflicted about these speaking engagements in the end, however. Although she enjoyed introducing QUILL well enough to fantasize about becoming a full-time QUILL trainer, she felt the strain of doing these presentations at the same time she was teaching, and regretted the time they took her away from her own class. She felt she needed to decide where she was going to put her major efforts, with the micro-computer or with the kids.

Continued QUILL Use

Over the summer the board of education voted to extend the QUILL program into all 4'th and 5'th grade classrooms in the district. When Gretta returned to school in the fall her experience as a "veteran" QUILL user was in great demand. She participated in the initial QUILL training session for all new teachers and gave a large group editing lesson to each class in the 4'th grade, which she thoroughly enjoyed. This meant that she was out of her own classroom a lot at the beginning of the year. On top of that, she broke her leg in the middle of September and was out for another three weeks because of that. By the time she got around to introducing her own class to QUILL it was well into the fall and she felt very much "behind."

Gretta was confident about her mastery of QUILL the second year, but she got no help from the CRS who was busy with all the other beginning teachers this time around. Moreover, her class was very different from the one she had had the year before. She had, as she put it, "a few bright kids, but in general the class had very little enthusiasm and no follow-through interest." She was obliged to spend more time with each student individually just to teach the basic QUILL commands and consequently really missed the CRS' help. In addition, the district had adopted the new language arts text, so she was busy developing a new language curriculum and might not have been able to give the time to QUILL that she had given the year before. In general, her class was slow and unenthusiastic about most of what they were doing, QUILL included.

Rewards and Teacher Attitude

Eventually her students began to get more involved in QUILL. They began to show some interest and their writing did improve. But Gretta's overall experience was of their lack of enthusiasm -- she did not get the rewards of her kids' great excitement and writing improvement the second year that she had gotten the first. She blamed herself alot --

repeatedly said she felt bad that she had not done more with QUILL --but her students' lack of success with it did not seem to diminish her regard for QUILL. She seemed sold on its value already and attributed the difference in her classes' experience with it to her own frequent absence and the overall slowness of the second group.

Gretta was taking a computer course in the evening to learn how to do her grades on the micro-computer and took her computer home several times to work with over the weekend. She was interested in getting several micros to work with at the same time and managed to round up three or four from around the school to have in her room for a week or so at one point during the year. Her discussions with QUILL trainers centered around how to increase learning through QUILL. She had suggestions for changes in the software, as well as the idea of using several micros simultaneously in the classroom. She said that she had no problems with QUILL at all, except that it had taken such a long time to introduce this class to it and that she was embarrassed they were so far behind.

Her rewards in the second year seemed to center around her knowlege of micro-computers, the pleasure that brought her, and the new horizons it opened for her as a teacher. She had gotten over her initial fear of micro-computers ("You're talking to the queen of non-technology !") completely, and was exploring new ways she could use them professionally. She was excited by this -- it seemed to give her a greater sense of professional possibilities, and she liked the fame she had acquired as a computer "expert" in her school. Her rewards, in other words, were not dependent upon her students' success with QUILL. Although she said the <u>greatest</u> reward was seeing her students' pleasure in their final printed pieces, she did not need to see dramatic improvements to feel good about QUILL. Perhaps because she understood <u>how</u> QUILL taught writing and had already seen how dramatically well students <u>could</u> do with it, she could recognize her own class's limited success as circumstantial. She was strong enough in her sense of herself as a teacher and in her belief in the value of the program that she did not need the immediate reward of the students' success. Moreover, she loved working with QUILL -- it fascinated her and gave her all sorts of new teaching ideas. Even in the second year she said, "I love QUILL. I enjoy every minute of it. I lie awake nights thinking about it."

<u>Writing Instruction</u>

Most of the changes in Gretta's instructional style occurred during her first year of QUILL use. QUILL trainers broke the writing process down into stages and emphasized going through each of these stages: organizing with a planner, getting a first draft out, editing for mechanical errors, then revising and rewriting. Gretta's writing instruction with QUILL

incorporated these new emphases. The Mailbag and book reviews gave her new ideas for writing projects, and students worked together and shared their work with each other more using QUILL. And, because revising was fun for the kids, she did alot more of it with them than she had before QUILL arrived.

Gretta reported very little change in her approach to writing instruction the second year. It was a period of consolidation for her: she used the same assignments she had used the year before, adjusting them slightly to make them more effective but not changing her use of QUILL significantly.

Lily Porcello

Early Reaction to QUILL

When Lily Porcello introduced her class to QUILL at F.D.R., circumstances were very different than they had been for Gretta Heller a year earlier. First of all, she had no choice in the matter. The decision had been made by the school board to implement QUILL in all 4'th and 5'th grade classrooms in the district that year, so she had to use QUILL, whether she wanted to or not. As it happened, she didn't. But Lily Porcello was one of QUILL's best "conversion" stories: originally dead set against having a computer in her classroom, by the end of the year she had become one of QUILL's staunchest advocates.

Lily Porcello thought that 4'th grade was the wrong time to introduce QUILL. Kids got a lot more work in the 4'th grade, she said; they didn't need this now. Also, it was extra work for her: as well as having to learn how to use QUILL herself, there were all those extra QUILL papers to correct. She said, "I wanted to throw the computer out the window for the first couple of weeks we had it." Now she would fight to keep it in her classroom.

General Background

Lily Porcello was a tough, strong-minded, rigorous sort of teacher, who expected a lot of her students and generally got a lot from them. Underneath her tough exterior was a genuine fondness for her students and they knew it. She was fully engaged in her teaching and very committed to it, if somewhat uninspired in her methodology and quite authoritarian in her classroom manner. (There was a sign hanging in her room which said, "You are free to do what you're told in this classroom.") Lily was a very good classroom manager --things were always under control in her room. She made her expectations clear and her class worked hard, often at several different things at once. A lot was accomplished in Lilly's room because of this. At the same time, she did not

seem too insightful about the way kids learn. Although she had been teaching for eleven years, she had worked first as a secretary in the school and got her teaching certificate by taking classes at night. She did not have a graduate degree in education and felt somewhat defensive about her status as a teacher, but she knew what she thought and was fairly outspoken with her opinions nevertheless.

Lily had had no experience with micro-computers prior to her introduction to QUILL.

Early QUILL Use/Assistance and Support

In spite of her resistance to the idea of using QUILL, Lily went about implementing the program in a fairly rigorous manner. She introduced QUILL to her class herself, after going through a three-day training with the rest of the 4'th grade teachers. She seemed to follow the Cookbook (a lesson guide for introducing QUILL) quite closely and, in a somewhat characteristic manner, had her students memorize the keyboard line by line for homework, teaching them how to place their hands correctly on the keyboard. Consequently they became proficient on the keyboard pretty quickly. Also, they loved using it ! They could not wait to get back to the computer to do their assignments. And they paid more attention to them than they had in the past: they were much more careful to find and correct their mistakes on the m-c because they really wanted to have a perfect final copy. Their spelling improved, their paragraphing improved, and they liked doing writing assignments as long as they could put them on the m-c. Lily noted real improvement, and the kids were so enthusiastic.

Also, QUILL dovetailed well with the new writing text they were using. And Lily does not have management problems in her classroom. It takes more than a micro-computer to disrupt order. Francine Fraser "dropped by" to check up on how things were going once or twice, but for the most part Lily had her room and QUILL under control. The kids used the computer alphabetically during their reading period, then anytime they were finished with their deskwork they could go back to it. So everybody got to use it if not every day, certainly a couple of times a week. In fact, kids would race through their other work just to get back to use the computer. That was a bit of a problem. But in general Lily was delighted with the kids' excitement and their improvement of writing skills. "When the kids hear that it might go into the computer, they work extra hard. Everyone strives for a perfect paper."

Continued QUILL Use

A couple of things happened to make it all seem even more worthwhile to Lily. First, using Mailbag, they wrote to

their principal, Myron Greeley. Then they wrote to their congressman, inviting him to come for a visit. When he came he was so impressed with the class that he invited them all to Washington to visit him. So they wrote to the school board asking for money to finance the trip. Then they wrote to Nancy and Ronald Reagan to see if they could visit them when they came to Washington. They did raise the money and they did go to Washington, and they learned a whole lot as well as having fun and getting somewhat famous through the whole experience. "These kids know a lot more about government than I'll ever know," Lily said. They lined up the governor to visit them when they got home. And of course they wrote a bundle of thank-you notes when they got back to Beechwood/Rowley so, as Lily put it, "letter-writing is a virtual snap to these kids now."

Writing Instruction

Other things happened too, some by design and some almost fortuitously it seems. The kids in Lilly's classes always do a lot of writing -- she has them keep journals and gives them a little story assignment for homework every night. With QUILL they were doing even more because they were editing and re-writing everything -- that was new. Lilly had always done some planning excercises with her students before they wrote but she did more of them with QUILL. Also, the kids were engaged with each other more using QUILL: they read each other the papers they wrote and edited each other's first drafts. That was new too. It almost seems as though, by following QUILL instructions, Lily got into some better teaching habits without realizing it. Also, the kids were interested in what they were doing. This does not seem to have been too important for Lily in the past, as long as they got their work done. For example, she said she thought she would use QUILL when she did research reports on countries next year,"because it's such a boring topic. Maybe the kids will enjoy typing in their reports better than just writing and writing and writing by hand."

Rewards and Teacher Attitudes

Clearly Lily is delighted with her kids' performance -- she says "I'm so proud of them. They've done really well. I don't want to give them up at the end of the year" -- and this was a major incentive for her to continue with QUILL. She seemed to think less about QUILL than she did about the micro-computer though; she said,"If a teacher makes up her mind that the micro-computer is going to help her, then it is. You've just got to spend the time with the kids in the beginning [learning how to use it]." She did not seem so aware of the different writing processes going on through the use of QUILL. The kids' improvement seems almost like magic to her, which she equates with the m-c: she said "I think

it's something good that happened to our classroom."

Van Ness

Building Characteristics

Van Ness Elementary School in Beechwood has 350 students in grades 1-6. The educational environment at Van Ness is somewhat more intense than at F.D.R.: parents tend to be professionals who are concerned with their children's educational progress, compare notes about their kids' teachers, and, in general, are more critical and more involved in the school. Maureen Price charcterized them this way: "Van Ness parents are so involved [in their children's education] that the kids could come to kindergarten already knowing their times tables."

The principal, Eddie Sherman, was a young, handsome, high-energy, very visible presence in his school. He believed in active leadership (said at one point that most principals don't realize how much power they really have) and believed he had a responsibility to set the tone for everything that went on at Van Ness, from treating the kids with respect to getting things back to his teachers when he says he will. He is confident in many areas, enjoys talking to teachers about the problems they are having, and does not shrink from confronting them with a problem if he thinks they have one. "I can tell a person they have a problem without taking the shine off their shoes," he says.

Eddie Sherman does not set building goals by choice, but the district requires him to do so and he complies with this. There are district goals, building goals, and each teacher has his or her own Personal Improvement Plan. Eddie waits until the district has set its goals, then meets with his staff to discuss building goals, and sets them to coincide with the priorities of both the district and his teachers. The second year of this study his building goals were: 1. science improvement (to improve 5'th grade district evaluations), 2. language arts improvement (which coincided with the introduction of the new language arts text), and 3. computer usage (which coincided with the district decision to adopt QUILL).

Eddie had a prior interest in computers and more knowlege and experience with them than most people in the Beechwood/Rowley school system. He had taken a variety of courses on m-c use, including a seminar at Rutgers on micro-computers in education, and was proud to have been the first elementary school in Beechwood/Rowley to have a computer literacy course. He was considered something of a computer hot-shot in the district: had connections in the industry, had served on the district computer committee, and had taught an afterschool class in programming the year before at Van Ness.

He was very enthusiastic about having QUILL pilot-tested in his school.

Early Assistance and Support

Eddie chose Esther Borrelli as the teacher he wanted to pilot QUILL the first year at Van Ness and prevailed upon her to "volunteer" for the job. He arranged with the CRS, Elsa Greenberg, to provide Esther with continuous assistance whenever she was using QUILL the first couple of weeks of school and thereafter whenever she felt it was necessary. He made sure that all the equipment arrived on time for the original training, which involved Esther, Gretta Heller, the two CRS', and he himself. His upfront involvement and support faded as QUILL got rolling and other priorities claimed his attention, but he remained a positive influence in the overall implementation at Van Ness.

On the other hand, the CRS' Elsa Greenberg remained a reliable assistant throughout the year. She provided day-to-day support in the classroom, helped Esther prepare QUILL lessons after school, and struggled through the Writer's Assistant commands with her when they came to that part in the program. Her active involvement lessened as the year went by, but only because Esther was doing fine on her own and did not need her help. But Elsa had been inspired by QUILL. She pursued her interest in micro-computers on her own and was teaching inservices on different m-c applications for teachers and repairing the district's hardware by the next year.

Esther Borrelli

General Background

Esther had had no prior experience with micro-computers beyond a short course she had taken at a local computing store. She felt somewhat appehensive about QUILL and quite overwhelmed by the initial training. Esther had taught for 17 years at Van Ness. Outgoing, enthusiastic, and energetic, she always had interesting things going on in her room and creative ideas for motivating her students. Her classroom was loosely structured: she conveyed very clearly what she expected of her students, so there was always a sense of organization in her room without the need for rigid rules or structures. The school itself focussed on writing as a priority, so even without QUILL her class kept journals and spent part of most days writing. In spite of her creative assignments, Esther's methods for teaching writing were fairly traditional, however. While she must have been exposed to "process" writing at Beechwood/Rowley, her own approach was much more mechanical.

Early Reactions to QUILL

Some of Esther's apprehension about QUILL came from the fact that her students had already had a fair ammount of exposure to m-c's and were relatively "technology-sophisticated". Beechwood is an upper middle class white suburban town: many of her students had micro-compputers in their homes or had been introduced to them in after-school programs or through the Cub Scouts. Esther felt nervous about her lack of experience and admitted to being afraid of making a fool of herself in front of her class. On the other hand, she thought of herself as flexible as well as professionally competent, and was not in the habit of refusing challenges. So she approached QUILL with some trepidation but with energy and determination as well.

Early QUILL Use

When she first introduced QUILL to her class Esther was nervous and excited. She followed the Cookbook exactly. Elsa Greenberg was present to help with any problems and take pairs of kids through the Library after Esther had done a large group demonstration. Her presentation went without a hitch, her students caught on quickly, and they loved using the m-c. Clearly her own excitement, especially after her successful introduction, was passed on to the students. Later, looking back in the year, Esther said, "It was such a big deal last year -- everything was so important!". That sense of importance surrounded QUILL throughout the year. Her students' enthusiasm continued as well, and their attitude toward writing changed. She no longer encountered moans and groans every time she assigned a piece of writing. Her students really enjoyed QUILL assignments.

Esther's initial difficulties were predictable: how to work out a procedure for managing QUILL in the classroom and fit it into her daily schedule. In general the m-c was only on during her reading and language arts periods -- no more than one and one half to two hours a day. She took QUILL slowly at first and had some difficulty with software bugs, but her CRS was able to help and her students took them in stride. They loved using the micro-computer and Esther took great pleasure in the fact that the whole thing was working. By January she had arranged her schedule and established procedures for using QUILL that worked well for her. Elsa's involvement in the classroom lessened as the year went on, but she was still available when needed and spent several long afternoons after school working out the Writer's Assistant commands with Esther.

Although she did not actually use QUILL that much, Esther could recognize a definite improvement in her students' editing skills, especially in their spelling, and noted their

greater motivation and enthusiasm for writing, which was sustained throughout the year. As she gained confidence in her ability to manage QUILL she scheduled a computer demonstration night, and parents of all her students came to see their kids working at the m-c. It was a highly successful evening, during which she was able to share her enthusiasm and accept praise and encouragement from her students' parents. Later in the year she and Gretta Heller gave a demonstration of QUILL to all the teachers in the district during an inservice day, and she began to see herself as a local computer expert. Still later (after much nervous preparation) the two of them gave a demonstration to the school board, which subsequently determined to purchase enough m-c's to use QUILL in all 4'th and 5'th grade classrooms.

Later QUILL Use

This decision changed the context of Esther's use of QUILL significantly. Suddenly, there was a district-wide interest in and support of QUILL, and she and Gretta became computer experts in the eyes of their colleagues. They were designated as QUILL resource people, participated in the original training sessions for both the 4'th and 5'th grades, and floated through these classrooms for two weeks helping other teachers get started on QUILL. The training itself was more elaborate than in the first year. It involved some special education and high school teachers who wanted to learn about QUILL, and included discussions about how QUILL could be integrated into science and social studies curricula as well as used for teaching writing.

There were two important consequences of the district-wide adoption of QUILL for Esther. First, she was out of her classroom a lot at the beginning of the year helping other teachers, so she did not get started with QUILL with her own class until fairly late. Second, the CRS had her hands full with all the other teachers just starting QUILL and was much less accessible to her. She had worked out all her classroom management problems the year before, however, the software had been debugged, and anxiety was no longer an issue for her. She found she was able to move much faster through QUILL than in the first year, and do more with it. She was more confident about her her own mastery of QUILL and her students were able to handle a faster pace. She found more time to use QUILL during the day as well. Also, many of the activities designated by the new language arts text dovetailed nicely with QUILL programs. Esther began using QUILL in a more spontaneous and imaginative way, integrating it into projects in different subjects and creating new projects to fill a hole in her curriculum rather than using it strictly by the cookbook. For example, since the new language arts text left less time for creative writing, she had her students create stories out of their weekly spelling

lists. The best of these were entered into the m-c, edited, printed out, then illustrated and bound together into a book.

Rewards and Teacher Attitude

Esther's interest in micro-computers grew as her expertise developed. She took courses from Elsa Greenberg after school to learn how to do recordkeeping on an m-c. She looked around for a way to become "computer certified" and was disappointed to find that no such certification existed. She felt good about her mastery of the QUILL software, liked being a computer resource person for other teachers, and was proud that her name was becoming synonymous with "computer expert" around the district. "QUILL has made me an important person," she said. It also presented her with the possibility of a different kind of job. Although she liked teaching and said she did not think it would ever happen, she realized that she would like to be a computer resource person in the district, and fantasized about having a computer lab where she could devote all her time to teaching kids how to use micro-computers.

The difficulties Esther experienced in her second year had to do with not having enough time to spend on QUILL. The new language arts curriculum was one of four new texts introduced in her grade that year, and each one required more than the usual ammount of time to teach. In fact, Esther was probably in better shape than most teachers in this regard since QUILL was not brand new to her. She also "complained" about having only one m-c in her room. "Once you've learned how to use them, it's just a tease to have only one," she said. Classroom management would be much easier if she had enough m-c's for one third of her class, she said.

On the other hand, she felt that a lot had been accomplished that year. She noted that both she and her students found writing assignments more fun on the m-c, and was very pleased with the ammount of writing her class had done. She cited one example of a physically impaired student for whom using QUILL had been the biggest breakthrough of his academic career. She also clearly felt rewarded by her new status as an m-c expert. Whether or not she ultimately became a computer resource person, her new knowlege and expertise was a big feather in her cap.

Janet Vandermeer

General Background and Writing Instruction

Janet Vandermeer had been teaching for several years at Van Ness, but she switched from teaching 1'st to 4'th grade the year of the study, so the entire 4'th grade routine was new to her at the time she began using QUILL. She had given a

lot of thought to the teaching of writing however, and had done some remarkable things with with first graders who were just learning to write. She had set up a very simple, process-oriented writing system whereby her class would talk about a writing topic together, then she would write out key sentences from the discussion and the kids would construct a story by selecting a series of sentences and putting them together into a meaningful sequence. The children made little books out of their stories by writing out each sentance on a separate sheet of paper and using the rest of the page to illustrate the sentence, then stapling the whole lot together. Janet was making a real effort to make writing fun for her first graders, at the same time she really taught them something. It was also a way to give a lot of individual attention to her students, because the kids could work independently and at their own pace most of the time, and she was free to move around and provide help where it was most needed. "It was alot of work," she said,"but I really loved it."

Janet had come up with the idea of using a word processor to help teach writing the year before, independent of any knowlege of the QUILL project, and had written to suggest it to her principal. She felt that the process of copying over work every time any corrections were made was de-motivating for students, and recognized how valuable it was to be able to print out a perfect copy after correcting a few mistakes with the word processor. She was pleased to hear that Esther Borrelli had been piloting the QUILL software in her 4'th grade class, and interested to know how it had gone.

Janet's technological sophistication was not vast. She had gotten a general introduction to micro-computers by taking an eight-week inservice on programming through the Beechwood/Rowley school system; beyond that she just knew what she had picked up reading popular magazines. She was not intimidated by the idea of technology in her classroom however, and had formed her own opinions about its appropriate use in elementary education.

Janet was a well-organized, hard-working, dedicated teacher who tended to expect a lot of her students. She said that the class that was learning QUILL was a bright group, and she set her standards accordingly. It was her style to try to get students to figure things out for themselves: she answered questions with questions, and often used small-group brainstorming sessions to get kids started on new projects. She easily handled several things happening at once in her room, seemed to prefer small-group to large-group activities, and her students worked well independently.

Janet was independent-minded: she had her own ideas about what she was doing, knew why she did what she did in her classroom, and was secure in her own educational beliefs.

For example, she did not agree with the district requirement for teachers to establish yearly goals through a Professional Improvement Plan (P.I.P.). She set goals for herself privately and preferred to keep the process private. In a similar way, she wanted her students to be motivated to want to learn, not simply to get through a set of assignments. She had an overarching philosophy of education which shaped her approach to most things she did at school.

Early Reactions to QUILL

Janet Vandermeer had already decided that word processing was a good tool for helping kids learn to write, so she did not need to be convinced of the value of the project. But unlike some first-time QUILL users without much experience with micro-computers, she was not "taken in" by the technology. She saw QUILL as a tool for teaching writing, but the micro-computer was not the focus of her interest. She recognized what learning processes the micro-computer facillitated but it was those processes she was interested in, not the m-c itself. She did not overrate its importance; it was a tool. When asked how she liked having the m-c in her classroom she said, "I enjoy using it, but it's not my passion, not my joy."

Of all the 4'th grade teachers, Janet Vandermeer was the only one not to choose QUILL as the focus of her P.I.P that year. She chose to concentrate on developing a good science curriculum instead. While she was not negligent in her use of QUILL over the year, she did not focus on it or emphasize its importance in the way that the other 4'th grade teachers at Van Ness did.

Early Assistance and Support

Janet benefited from a good training workshop on QUILL use at the beginning of the year, and both Esther Borrelli and the CRS were available and willing to help with problems throughout the year. In addition, she enjoyed the support and assistance of the other 4'th grade teachers who were just beginning QUILL. There was a lot of mutual support and comradery amongst this group -- Janet mentioned this several times. The teachers liked to work together and help each other out, and none of them was having a terrible time with QUILL.

Early QUILL Use

Janet introduced QUILL to her class with less fanfare than some of the other teachers. Her students learned the QUILL commands without much difficulty. They caught on fast and required less individual attention than she had expected they

would. In fact, the whole process was less disruptive than she had anticipated. She had a typewriter in her classroom already, so her kids could practice their keyboard skills and type out first drafts of their writing assignments. Some kids were even taking typing lessons after school to avoid having to hunt and peck at the keyboard.

Janet Vandermeer worked QUILL into her classroom routine fairly easily. The micro-computer was on most of the day; kids signed up to use it, and went back to the computer station when their turn came up. The m-c was in use during reading periods, at recess, and whenever else students had free moments during the day. Janet said she had always given her students a lot of writing assignments, so she was used to squeezing in writing whenever she could. Doing this with QUILL was no different than doing it before she had QUILL to use. Mostly she used Mailbag and the Library, for letters and for creative and expository writing. She did not use the Planner. It seemed like a good way for her to organize her classroom procedures, but she did not see how it would help her students to plan their writing. She said, "It doesn't save me time so I don't use it."

For assignments destined to be put on the micro-computer students brainstormed, usually in a class discussion, and wrote a handwritten first draft, which Janet Vandermeer edited using editing marks out of the new language arts text. If the corrections involved simple punctuation and word changes students, usually working in pairs, input directly from their first draft. If a significant amount of revising was required, a second draft, handwritten, had to be resubmitted for Janet's editing before it could be cleared for input. Students did some peer editing of their printouts but Janet edited the first drafts of almost everything that was written in her class. Students did not compose at the keyboard.

Janet rarely gave assignments that were to be done specifically on the micro-computer. She worked with a variety of final formats: students put some writing assignments into a journal, some they made into illustrated booklets, some they prepared for hanging on the wall, and some they input into the m-c. All students had to learn how to use QUILL and everyone had a chance to use it, but how much each student used it was partly a matter of their choice as they had to sign up themselves to get time on the computer.

One thing that Janet Vandermeer noticed and continued to comment upon throughout the year was that QUILL was a powerful motivating device for getting students to work on their writing. "Kids really want their papers to look right when they come out of the printer; they want them to be right," she said. QUILL motivated them to want to correct

every mistake, and motivation is an important factor for success. More specifically she said that it made her kids more interested in language and in using correct forms of expression. It motivated them to do more research on research papers and more creative writing. She saw QUILL an an enabling tool for her students: "QUILL allows children to achieve excellence in language skills," she said.

Continued QUILL Use

Janet continued to do a lot of writing with her class throughout the year -- "as much as I can follow up on," she said. "I'm editing heaps and piles of written work this year. What we need is an editing computer." Since each child's writing was individualized in terms of final format, number of drafts, and the length of time it took him or her to complete the assignment, writing became a complicated activity to track. Eventually Janet set up a filing system to keep track of where each kid was on each assignment. This made things a lot easier for her.

At the beginning of the year the class did a lot of report-writing activities with QUILL, using the micro-computer for storing resource material as well as for writing summaries and opinions. Later in the year Janet did more creative writing with her students. She gave a variety of assignments and used a variety of formats because she wanted them to learn how to do different things with writing. It gave those students who had not done much on the m-c more opportunities to use it as well. Students did more peer editing later in the year, but not a lot more. Their input came more often in the form of peer review in the later stages of correction.

Janet Vandermeer felt she got very good assistance and support around QUILL throughout the year "I was never left in the lurch, not knowing what to do," she said. Good support minimized her frustration over any difficulties she may have had with the new technology. Her lack of frustration was due in part to the realistic expectations she had of QUILL also, however. She seemed to understand what QUILL could and could not do, and adjusted her expectations to its limitations. Essentially, she used it to enhance her basic teaching strategies; because she did a lot of writing and tended to be process-oriented already, they did not change much with the introduction of a micro-computer.

Rewards and Teacher's Attitude

Janet enjoyed using the micro-computer: "I would definitely use it next year," she said. "It's a good system; a good way to teach language." It was nice to tell people what her class was doing with the m-c also -- she enjoyed "keeping up

with the times." Using QUILL increased her awareness of the importance of micro-computers in her students' lives, and her sense of responsibility for providing a positive experience of them, which she felt she had done. Most of all, she felt that QUILL was a powerful motivation for getting kids to write and write better. Inputting their writing forced them to get involved with language in a much more intimate way than they had before, and yet it did not feel like work to do it. She could recognize an overall improvement in her students' reading and writing skills. Students benefitted differentially from QUILL: those with a special facility for language went farthest with it, but it was also particularly helpful for kids with poor writing skills and trouble with the cognitive aspects of writing.

Janet managed to get many of the typical rewards of QUILL use without many of the attendent anxieties. She saw that her students were benefiting from it and had fun with QUILL because they were enjoying it. But she did not worry overly much about mastering every move in the program. Some of her students were better QUILL users than she but that did not bother her. "I don't feel I need to defend a position of perfection, " she said. Her use of QUILL was less "robust" than some of the other 4'th grade teachers', but her teaching of writing was quite "robust", process-oriented, and thoughtful. She viewed QUILL essentially as a tool for teaching writing, but did not think it was the only useful tool and was not necessarily interested in getting another m-c for her room. "When the kids aren't using the micro-computer they're exploring another format," she said, and that was clearly important to her also. The rewards she recognized for using QUILL were the same rewards she got for using any good teaching tool: the satisfaction of seeing her students excited and learning well.

Institutionalization

In February 1985 Maureen Price was contacted for an update on QUILL use at Beechwood/Rowley. She said that D.C. Heath had replaced the software that Beechwood/Rowley had received from QUILL trainers but that other than that little else had changed. All the 4'th and 5'th grade classrooms in the district were still using QUILL. It was a regular part of the language arts curriculum for these grades and had become fairly routine for the teachers involved, who were, for the most part, the same teachers who had used QUILL last year. Each teacher uses QUILL slightly differently, focussing on that part of the program which interests him or her most and fits best into his or her writing instruction. But all 4'th and 5'th grade teachers are using it, and many use it for science and social studies instruction as well as for writing.

This year, for the first time in Beechwood/Rowley, 2'nd and

3'rd grade students are learning to use LOGO. Maureen predicts that this will improve these kids' future use of QUILL, since, when they move on to QUILL, they will already be familiar with the micro-computer and have some keyboard skills.

In addition to being used in the middle schools, QUILL is in use in the high school "English Workshop", a euphemism for the class for those students who have failed the state test for Reading or English. Teachers of the English Workshop have spent several inservice days developing specific ways to use the Planner to help these students with advanced organizational problems in their writing. It is a specialized and quite successful use of the QUILL program, now in its second year. English Workshop students are able to use QUILL more intensively than the younger students in part because many come to the class with word processing skills already and in part because they have more hardware at their disposal. There are six Apples for a class of only ten students at the high school.

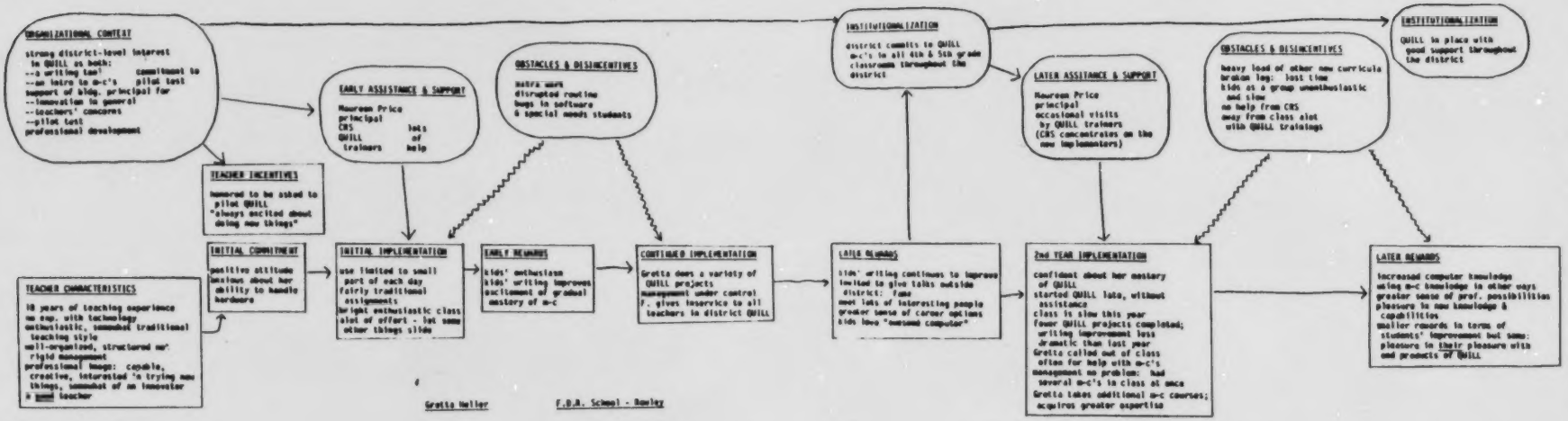
Last year, when the Beechwood/Rowley began its district-wide implementation of QUILL in the 4'th and 5'th grades, Maureen Price organized a massive training for all the CRS', media specialists, Basic Skills teachers, and principals as well as the middle school teachers who would be involved in the project. This year there was no new training, since the people involved with QUILL were, for the most part, the same. Those few teachers new to the 4'th or 5'th grades got informal training from their building CRS after school and during their planning periods. No follow-up training or refresher course was offered. Teachers have grade-level planning periods to discuss their common curricula, and QUILL problems are dealt with here or through the CRS'. According to Maureen Price, these have taken care of any problems that have arisen. The "veteran" QUILL teachers continue to be useful to their colleagues, and no drop in enthusiasm is reported.

Maureen Price is still the "gate-keeper" of the project (as she puts it) and makes it her responsibility to monitor QUILL activity and progress. She just recently received back the results of this year's survey of QUILL use. In each elementary school there are, on the average, eight teachers using QUILL, of which only two are "dragging their feet." While the amount of time each CRS spends in a QUILL classroom depends on the teacher's level of confidence with the program, the CRS's tell her that each child using QUILL gets a minimum of 20-30 minutes a week on the micro-computer. She says that the school where QUILL has been most successful is the one where the principal has given the most encouragement and support -- Eddie Sherman's school, Van Ness (Myron Greeley, at F.D.R., has retired, she reported.)

While everything seems to be going well right now, the future for QUILL is less bright. The make-up of the school board has changed since QUILL was first introduced in Beechwood/Rowley, and a new superintendent was (finally) hired. Both are more concerned with saving money than with thinking about the quality of the curricula, Maxine reports. The result has been "a catastrophe". The CRS staff, originally one per building throughout the district, has been cut to a total of two for all the elementary schools, one for all the middle schools, and none in the high school. "I hesitate to think what will happen to QUILL next year," Maxine said.

Though most teachers are already trained in QUILL use, the CRS helps out a lot at the beginning of the year when teachers are introducing their classes to QUILL. They also serve as a communication link between the teachers and Maxine, who makes any policy decisions about the way QUILL should be used. The district computer specialists may take up some of the slack left in the CRS'absence. These are high school math teachers who already have responsibility for the hardware that QUILL is used on. But their time has been cut back as well and, as Maxine points out, they don't know anything about process writing. The teachers will definitely miss the CRS's, she says -- the entire staff is unhappy about this move.

Maxine says she is not sure just how unsafe QUILL is at this point. The major capital outlay has already been made for hardware and software; now all the district needs to do is keep up with supplies, and discs are not a major budget expense. Staff <u>is</u> a major expense however, and getting staff to support the program is clearly going to be a problem. "QUILL isn't sacred," she said. "It could go." For someone who has invested so much time and personal energy getting the program instated at Beechwood/Rowley, this is clearly hard for Maxine to contemplate.


ORGANIZATIONAL CONTEXT
strong district-level interest in QUILL as both:
--a writing tool
--an intro to m-c's
support of bldg. principal for
--innovation in general
--teachers' concerns
--pilot test
professional development
commitment to pilot test
EARLY ASSISTANCE & SUPPORT
Maureen Price
principal
CRS
QUILL trainers
lots of help
OBSTACLES & DISINCENTIVES
extra work
disrupted routine
bugs in software
& special needs students
INSTITUTIONALIZATION
district commits to QUILL m-c's in all 4th & 5th grade classrooms throughout the district
LATER ASSISTANCE & SUPPORT
Maureen Price
principal
occasional visits by QUILL trainers
(CRS concentrates on the new implementers)
OBSTACLES & DISINCENTIVES
heavy load of other new curricula
broken leg: lost time
kids as a group unenthusiastic and slow
no help from CRS
away from class alot with QUILL trainings
INSTITUTIONALIZATION
QUILL in place with good support throughout the district
TEACHER INCENTIVES
honored to be asked to pilot QUILL
"always excited about doing new things"
TEACHER CHARACTERISTICS
10 years of teaching experience
no exp. with technology
enthusiastic, somewhat traditional teaching style
well-organized, structured w/ rigid management
professional image: capable, creative, interested in trying new things, somewhat of an innovator
a good teacher
INITIAL COMMITMENT
positive attitude
anxious about her ability to handle hardware
INITIAL IMPLEMENTATION
use limited to small part of each day
fairly traditional assignments
bright enthusiastic class
alot of effort - but some other things slide
EARLY REWARDS
kids' enthusiasm
kids' writing improves
excitement of gradual mastery of m-c
CONTINUED IMPLEMENTATION
Grotta does a variety of QUILL projects
management under control
F. gives inservice to all teachers in district QUILL
LATE REWARDS
kids' writing continues to improve
invited to give talks outside district: fame
met lots of interesting people
greater sense of career options
kids love "awesome computer"
2nd YEAR IMPLEMENTATION
confident about her mastery of QUILL
started QUILL late, without assistance
class is slow this year
fewer QUILL projects completed; writing improvement less dramatic than last year
Grotta called out of class often for help with m-c's
management no problem: had several m-c's in class at once
Grotta takes additional m-c courses; acquires greater expertise
LATER REWARDS
increased computer knowledge
using m-c knowledge in other ways
greater sense of prof. possibilities
pleasure in new knowledge & capabilities
smaller rewards in terms of students' improvement but some pleasure in their pleasure with and products of QUILL
Gretta Muller
F.D.R. School - Bowley

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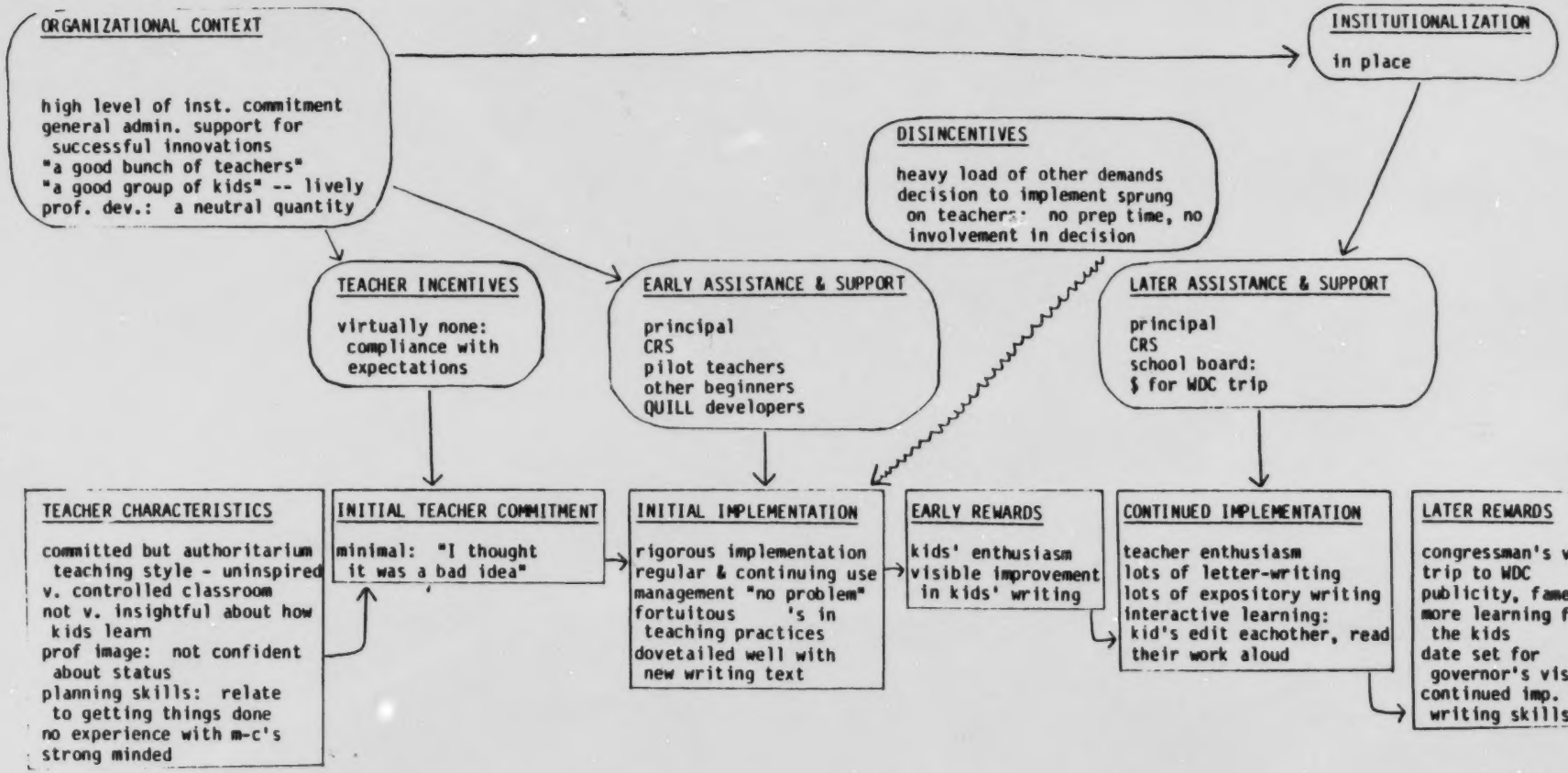
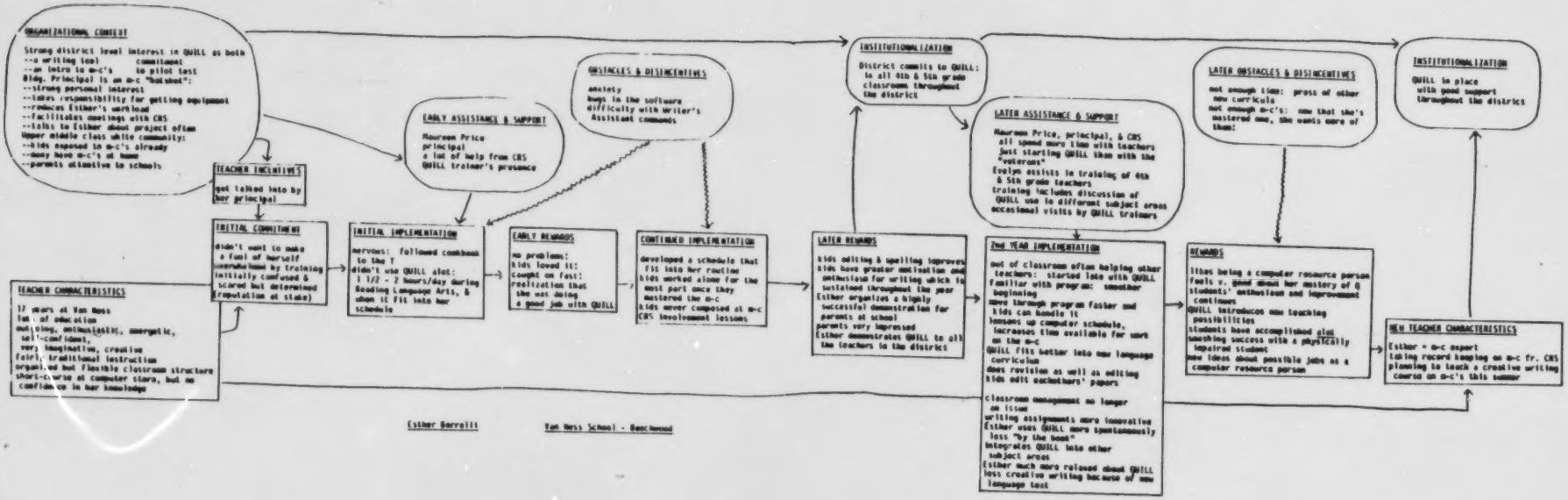


Lily Porcello F.D.R. School - Rowley


ORGANIZATIONAL CONTEXT
Strong district level interest in QUILL as both
--a writing tool commitment
--an intro to m-c's to pilot test
Bldg. Principal is an m-c "hot shot":
--strong personal interest
--takes responsibility for getting equipment
--reduces Esther's workload
--facilitates meetings with CRS
--talks to Esther about project often
Upper middle class white community:
--kids exposed to m-c's already
--many have m-c's at home
--parents attentive to schools
TEACHER INCENTIVES
got talked into by her principal
EARLY ASSISTANCE & SUPPORT
Maureen Price
principal
a lot of help from CRS
QUILL trainer's presence
OBSTACLES & DISINCENTIVES
anxiety
bugs in the software
difficulty with writer's Assistant commands
INSTITUTIONALIZATION
District commits to QUILL:
in all 4th & 5th grade classrooms throughout the district
LATER ASSISTANCE & SUPPORT
Maureen Price, principal, & CRS all spend more time with teachers just starting QUILL than with the "veterans"
Evelyn assists in training of 4th & 5th grade teachers
training includes discussion of QUILL use in different subject areas
occasional visits by QUILL trainers
LATER OBSTACLES & DISINCENTIVES
not enough time: press of other new curricula
not enough m-c's: now that she's mastered one, she wants more of them!
INSTITUTIONALIZATION
QUILL in place
with good support
throughout the district
TEACHER CHARACTERISTICS
17 years at Van Ness
lots of education
outgoing, enthusiastic, energetic, self-confident,
very imaginative, creative
fair, traditional instruction
organized but flexible classroom structure
short-course at computer store, but no confidence in her knowledge
INITIAL COMMITMENT
didn't want to make a fool of herself
overwhelmed by training
initially confused & scared but determined
reputation at stake)
INITIAL IMPLEMENTATION
nervous: followed cookbook to the T
didn't use QUILL alot:
1 1/2 - 2 hours/day during Reading Language Arts, & when it fit into her schedule
EARLY REWARDS
no problems!
kids loved it!
Caught on fast!
realization that she was doing a good job with QUILL
CONTINUED IMPLEMENTATION
developed a schedule that fit into her routine
kids worked alone for the most part once they mastered the m-c
kids never composed at m-c
CRS involvement lessons
LATER REWARDS
kids editing & spelling improves
kids have greater motivation and enthusiasm for writing which is sustained throughout the year
Esther organizes a highly successful demonstration for parents at school
parents very impressed
Esther demonstrates QUILL to all the teachers in the district
2nd YEAR IMPLEMENTATION
out of classroom often helping other teachers: started late with QUILL
familiar with program: smoother beginning
move through program faster and kids can handle it
lessons up computer schedule, increases time available for work on the m-c
QUILL fits better into new language curriculum
does revision as well as editing
kids edit eachothers' papers
classroom management no longer an issue
writing assignments more innovative
Esther uses QUILL more spontaneously less "by the book"
integrates QUILL into other subject areas
Esther much more relaxed about QUILL
less creative writing because of new language test
REWARDS
likes being a computer resource person
feels v. good about her mastery of 6 students' enthusiasm and improvement continues
QUILL introduces new teaching possibilities
students have accomplished alot
soothing success with a physically impaired student
new ideas about possible jobs as a computer resource person
NEW TEACHER CHARACTERISTICS
Esther - m-c expert
taking record keeping on m-c fr. CRS
planning to teach a creative writing course on m-c's this summer
Esther Berrelli
Van Ness School - Beechwood

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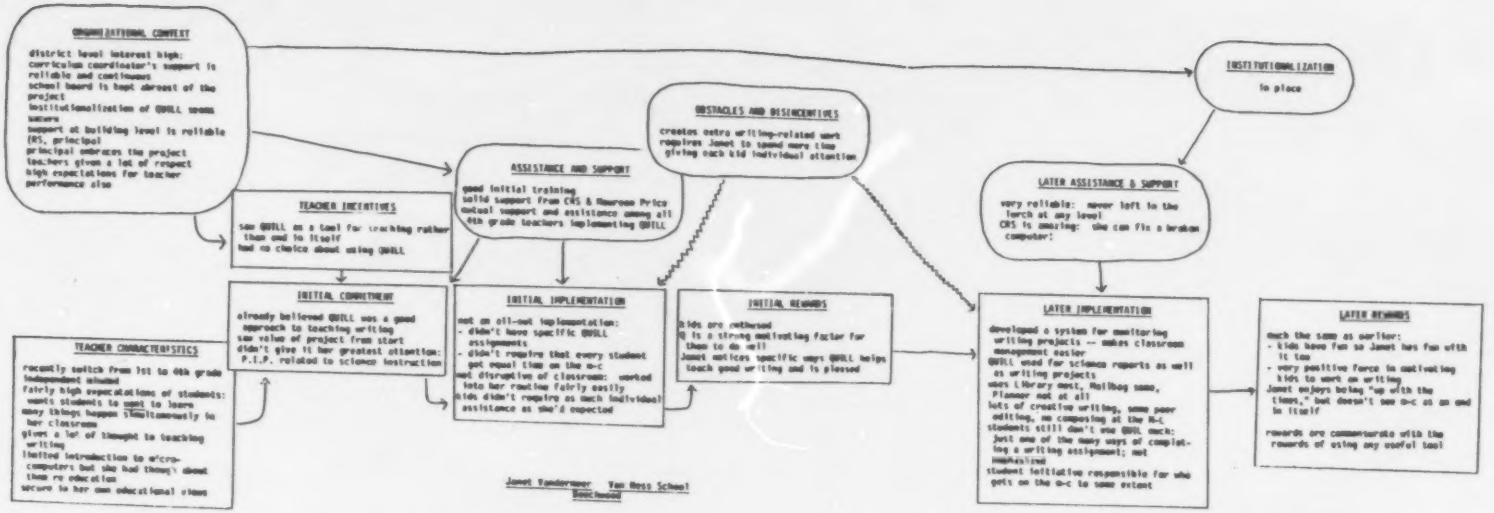
ORGANIZATIONAL CONTEXT
district level interest high;
curriculum coordinator's support is reliable and continuous
school board is kept abreast of the project
institutionalization of QUILL seems secure
support at building level is reliable (RP, principal)
principal embraces the project
teachers given a lot of respect
high expectations for teacher performance also
INSTITUTIONALIZATION
in place
OBSTACLES AND DISINCENTIVES
creates extra writing-related work
requires Janet to spend more time giving each kid individual attention
ASSISTANCE AND SUPPORT
good initial training
solid support from CRS & Maureen Price
mutual support and assistance among all 4th grade teachers implementing QUILL
LATER ASSISTANCE & SUPPORT
very reliable: never left to the lurch at any level
CRS is amazing: she can fix a broken computer!
TEACHER INCENTIVES
saw QUILL as a tool for teaching rather than end in itself
had no choice about using QUILL
INITIAL COMMITMENT
already believed QUILL was a good approach to teaching writing
saw value of project from start
didn't give it her greatest attention: P.I.P. related to science instruction
INITIAL IMPLEMENTATION
not an all-out implementation:
- didn't have specific QUILL assignments
- didn't require that every student get equal time on the m-c
not disruptive of classroom: worked into her routine fairly easily
kids didn't require as much individual assistance as she'd expected
INITIAL REWARDS
kids are rethroned
it is a strong motivating factor for them to do well
Janet notices specific ways QUILL helps teach good writing and is pleased
LATER IMPLEMENTATION
developed a system for monitoring writing projects -- makes classroom management easier
QUILL used for science reports as well as writing projects
uses Library mast, Mailbag some, Planner not at all
lots of creative writing, some peer editing, no composing at the m-c
students still don't use QUILL much: just one of the many ways of completing a writing assignment; not emphasized
student initiative responsible for who gets on the m-c to some extent
LATER REWARDS
much the same as earlier:
- kids have fun so Janet has fun with it too
- very positive force in motivating kids to work on writing
Janet enjoys being "up with the times," but doesn't see m-c as an end in itself
rewards are commensurate with the rewards of using any useful tool
TEACHER CHARACTERISTICS
recently switch from 1st to 4th grade
background almond
fairly high expectations of students: wants students to want to learn
many things happen simultaneously in her classroom
gives a lot of thought to teaching writing
limited introduction to micro-computers but she had things about them re education
secure in her own educational views
Janet Vandervoer Van Ness School
Benchmark

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Vignette:

Faye Crocken
Carleton

Background

Connie Fujimoto, assistant superintendent and the person in charge of coordinating QUILL implementation in Carleton, suggested we talk to Faye Crocken as an example of someone who had had a hard time with QUILL, in spite of her valiant efforts to make a go of it. She was one of two teachers to pilot QUILL in her school last year -- the other was a 3'rd grade teacher, a real computer whiz -- and was in the middle of her second year with it when I talked to her. She had been asked by her principal if she would be willing to pilot QUILL and had agreed, somewhat apprehensively since she had had no experience with micro-computers before. But she was going to be retiring in a couple of years and said she liked the idea of getting involved in the latest thing in educational technology before she left. She also said she thought that privately other school people believed that she was probably too set in her ways to change enough to accomodate to QUILL. She did not think that was true, and took pains to explain her criticisms of QUILL clearly to me, so that I would understand it was not just a question of inflexibility or unwillingness to try something new. She said she did not think she was the kind of person who avoided things just because they were hard, and had continued on for a second year with QUILL because she knew that the first year of anything was always hard. But she seemed to become, if anything, more sure about her objections to QUILL in the second year.

District Characteristics

Carleton is an upper middle class suburban district. Parents of the students in Carleton schools are, in general, wealthy and pay considerable attention to their children's education. Connie Fujimoto, who is in charge of curriculum and instruction for the district, is both a QUILL "convert" and an enthusiastic user of micro-computers. She has big plans for QUILL in the district, which she says she is "getting the school board used to slowly". She has already incorporated the process approach to writing into the district writing curriculum and would like to make QUILL the core of that program. She talks about eventually having six micro-computers in every classroom. For the moment there are only two QUILL computers in each elementary school, although there are additional micros which are used for LOGO.

Assistance and Support/Early Reactions to QUILL

Mrs. Crocken attended a three-day introductory QUILL

training with the other teachers from schools piloting QUILL in Carleton last year. The training was great, she said: the QUILL trainers were very nice and it was exciting to be introduced to the micro-computer and begin to learn to use QUILL. But it's another thing to try to work it into your classroom routine, along with all the other things you have to cover. Mrs. Crocken said she felt that 5'th grade was an important transition grade for kids. They were moving on to the middle school the next year and alot more would be expected of then. She felt it was very important that they be solidly grounded in basic skills before they left elementary school, otherwise they might never learn these skills. And she felt that instead of improvement, she saw a deterioration in her kids' writing skills since she started using QUILL.

Writing Instruction

Carleton has a very good writing program, she said: the kids keep theme books and write in them almost every day. What she had done was try to fit QUILL in to her regular language arts instruction, but it had not worked very well. She has her kids write at least three times a week; QUILL has not chnaged that. Before QUILL she would decide on a writing theme; say, writing a persuasive letter, or Winning the Megabucks, or What I Am Thankful For (at Thanksgiving). Then she have the whole class brainstorm ideas which might be included in this piece, asking questions to them as a group and writing down their ideas on the board. She would give them time to think about their piece and talk to each other about it, then have them write out something in their themebooks. (Occasionally she has two kids write together just so they'll learn how, but she and they prefer to work individually.) This was supposed to be pre-writing: grammar, spelling, and punctuation did not matter here. Nothing was corrected. We are supposed to do five or six of these pre-writing excercises and then let the students chose one to work further on, she said, but sometimes I will have the whole class work on the same piece. In either case, the next step for students is to edit the piece themselves, copy it over, and hand it in to Mrs. Crocken for review. She then meets individually with each kid to go over his or her paper. We are not supposed to make any marks on their papers, she said, but I do. I don't think the kids can remember their mistakes if you don't. At the beginning of the year she will circle a misspelled word or underline a run-on sentance; later on she just puts "-1" or "-2" beside a line and the kid has to find the mistakes him- or herself.

Unless the piece is going to be "published" (copied over for display in some form or another) not much more is done with it. The piece goes into the students' writing folders, and at the end of the year each kid chooses his or her best piece to be copied over and put in their school file as a record of

that year's work. I used to have the kids keep spiral notebooks where they copied all their good writing, Mrs. Crocken said, but there just is not time to do that anymore.

QUILL Use

For QUILL assignments, there is supposed to be a planner in the micro-computer, a set of questions which the students respond to before writing out a first draft. Mrs. Crocken showed me several planners she had developed and used for writing limericks, a letter to the editor, a job application, a piece on Who Does The Dishes (boys or girls), a piece on My Favorite Age. Some of these she has developed with another 5'th grade teacher in another school ("of the same vintage", as she put it) who was having similar trouble with QUILL. "But I haven't used these planners very much this year," she said. "I don't have time to write them, and the students don't like or have time to fill them out."

"I know the kids are supposed to write their first draft at the keyboard, but they really don't like doing that," Mrs. Crocken said. Sometimes she makes them, but usually pieces are entered into the computer after the brainstorming has been done as a class, and a first draft has been hand-written. The students find the editing commands difficult, and Mrs. Crocken isn't always able to help because she doesn't understand them completely herself. "We need a longer training period," she said, "something like a summer workshop where we could go back day after day and really learn the commands." With classroom preparation and meetings after school, and a sense of commitment about spending time with her family and friends, Mrs. Crocken has not had time to sit down with the computer and work out all the ins and outs of the program. She has had no help in this from any curriculum coordinator or writing specialist either. It seems, therefore, that she has not taught her class the editing functions of QUILL very well.

Mrs. Crocken makes a list of the students who want to work on QUILL at the beginning of each day, and assigns them to 1/2 hour time blocks during the period when the computer will be on. (This varies from day to day, she says. Some days it will be on all day; some days not at all. It depends on what else we're doing -- and what kind of mood I'm in. Clearly, QUILL creates a certain ammount of frustration and aggravation for her.) But 1/2 an hour really isn't enough time to get much done on the computer, and by the time the kid gets back to it two or three weeks may have passed. By that time the kids have lost interest in their story, she says, and so have I. We are completing alot fewer assignments with QUILL.

Mrs. Crocken says that all her students have to do some writing on QUILL, but those students who are more interested

in it or the computer can sign up often while others may use it very infrequently. Some kids just hate it, Mrs. Crocken says, and it doesn't make sense to make them use it. Those who do use it prefer to do their editing at their seats by hand, then just type their corrected copy into the computer. Mrs. Crocken says she used Mailbag a little last year, but really has not used it this year. She doesn't get the point. "Why isn't it just like passing notes ?" she asks. She tells the kids that it is there for them to use, "but they don't want to sit inside at recess writing notes. They'd rather be outside talking to each other." She mentioned a couple of times that she felt human interaction was very important in learning, and that QUILL sometimes made her feel like her own input was being devalued. "With 23 kids and math and reading and languaage arts and science and social studies and QUILL, and LOGO [they have two terminals for LOGO in the room also] and kids coming in and out for special ed. and band, you begin to feel like just a traffic cop, a custodian of kids. It makes you feel that what you have to offer is of no importance."

Faye's classroom, even without students, is a bright, active place. There are bulletin boards of different examples of students' work on all the walls and models of different projects on which they've been working on windowsills and counters. Two LOGO terminals and the one QUILL Apple face up against one wall. Fran says the kids like LOGO better than QUILL "because they can draw pistures with it", but also acknowleges that they have been doing LOGO for two years already so it is easier for them.

She had told her class that I was coming to talk to her about QUILL that afternoon and had a discussion about the pros and cons of using QUILL, "so she could represent their views to me". Among the problems she mentioned were: a lack of time to do planners and follow through on an assignments started on QUILL; a lack of typing and editing skills so that it takes students a long time to get things done at the keyboard; difficulty in thinking creatively at the keyboard; interference with the basic teaching going on in the room; and the students did not like working in pairs at they keyboard. Positive points mentioned were: exposure to the computer and word processing; and teaching 1'st graders how to use the keyboard. (One of Mrs. Crocken's favorite activities was to send her students down to the first grade to help the younger kids learn how to write reports. When the reports were written, both students would come back to her classroom, and the 5'th grader would teach the 1'st grader how to put it onto the computer. This proved to be a good way of getting the 5'th graders to learn how to use the QUILL commands.)

Clearly Mrs. Crocken had decided that QUILL was not going to be useful in her classroom. She felt that she did a good job

as a teacher without it -- even thought she had some special expertise in the area of Language Arts -- and it bothered her to have to spend time with something she could not teach effectively with. At the same time, she did not get alot of support in her implementation beyond the initial QUILL training. There were people available for her to call on if she had an emergency, most notably the 3'rd grade QUILL teacher, but that is not the same as having a CRS in the building whose job is to be of assistance, or a critical mass of teachers who were all struggling with the same problem. From what I could understand, there were no follow-up trainings, and the discussions that were held were not adequate to address her needs.

It seems likely that Mrs. Crocken's students' lack of enthusiasm was a relection of her own lack of enthusiasm (she admitted as much) and of the probably inadequate training she gave them on QUILL. It also seems likely that she was sticking with QUILL more out of a determination not to give up on it than she was out of any real commitment to the program itself.

Joe Armstrong
Hoover City

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District Characteristics

Hoover City is a middle-size metropolis in the Northeast corridor. It has a stable service industry and some upper-class neighborhoods, but much of its population is minority, working class or poor.

The district got involved with Quill early on, as a pilot test site. The assistant superintendent, Gary Mulroney, was an enthusiastic supporter of Quill and served on the Quill project advisory board. The district computer coordinator, Greg Hennicut, was involved in the initial acquisition of equipment and setting up the training session for Quill, but after the project got started, he had little to do with it.

School characteristics

The Martin Houseman School is an urban, low SES school; all of the students come from either of two housing projects near the school. Approximately three-quarters of the students in the school are Hispanic, primarily from Puerto Rico, but also some from Cuba. The remaining students are Black. Many of the students spend part of the school year in Puerto Rico with their families. This transiency is considered a major problem in the school.

The principal at Martin Houseman was not hostile to the idea of Quill, but he was not particularly involved in its implementation, either. The vice-principal, Larry Montagne, however, was extremely interested and supportive and proved to be a valuable ally during the year. There were no teacher aides or student teachers. Other school personnel, such as the reading specialist, would occasionally observe the use of Quill but didn't get involved in any other way.

Joe Armstrong's class was a typical sixth grade for Martin Houseman School, with students ranging from 11 to 14 years of age, some having been held back as much as two years in school. The class had 31 students, none identifiably "special needs" but most well below average inr eading test scores. None of the students had full computers at home, although one had a small Atari game computer. The students were almost all enthusiastic about Quill, especially because their classroom and school had few other novel activities. There was, however, a greenhouse project

started by a local garden club. Students planted seeds and nurtured plants over most of the school year and, in one instance, combined Quill and the greenhouse into a joint plant observation and report project.

Assistance and Support

Joe was not one of the first two teachers chosen to pilot Quill in Hoover City. Vice Principal Larry Montagne hadn't asked Joe at first because he thought of him as being negative about computers; Joe didn't "jump on the computer bandwagon." Joe characterizes himself as cautious about educational innovation; Larry may have perceived that as disinterest on Joe's part. However, one of the two teachers who had agreed to try out Quill backed out at the last minute, and Joe got his chance. (Joe privately says he doesn't think the teacher who backed out would have done much with Quill.)

After the initial introduction of Quill, Larry would stop by to see how things were going; Joe characterized him as supportive. Unfortunately, he left the school system and the country at the end of Joe's first year using Quill. No other sources of support were available to Joe within the school system. The other teacher using Quill in Hoover City was in another school and the principal at Martin Houseman didn't want to know anything about it. Joe was disappointed that people in the school system who should have been looking carefully at Quill were not. The main reason was that Greg Hennicut, the computer coordinator, had to approve all software used by the school system. Greg, however, looked at software from a technical rather than an educational point of view and he was not excited enough about Quill to plan to spread it through the district. Hoover City has a district level reading coordinator, but she was not involved in the Quill project; they do not have either a writing or language arts coordinator who could have helped link the computer and curriculum aspects of the innovation.

Another possible source of support was Hoover City's new writing curriculum, which paralleled Quill and the process approach to teaching writing. Joe had inservice training in it the same year he started using Quill. Probably its effect was to mitigate some of the disincentives Joe might have felt if Quill's approach had differed significantly from that of the mandated curriculum.

Although Joe seemed quite isolated in his use of Quill, he claims he wouldn't have been able to make good use of other teachers in the building who were using Quill, however, because he wouldn't have had time to talk to them even if they had been there. He thought having a phone in his class with which he could call the trainer in Cambridge was "the best." He place great importance on the trainer's follow-up visits. He

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said, "When the steam would start to let out of the system, particularly when we were having bug problems...and then he'd come down and breathe a little more air into us - and enthusiasm and off we'd go. And that was vital."

Joe Armstrong

General Background Joe had taught for several years, but at different grade levels, all in the Hoover City school system. This was his first year with sixth graders. He had a fairly traditional teaching style, using basal readers, workbooks, and reading groups. He had no previous experience with computers, but did have a home hi-fi system which had made him comfortable with electronics and patch cords.

Just prior to his first year using Quill, Joe had taught third grade. In that class, he put a fair amount of emphasis on writing. His approach was based on a book called "Art Today and Everyday" which introduced monthly themes and different projects every day. In that class, his students wrote in some fashion every day, and Joe was thinking of putting together a writing cookbook for teachers. He felt at that point that he didn't have any background in how to teach writing or what the structure of a writing program was. He was just trying to stimulate his students as much as possible.

Early Reactions

When Joe switched to sixth grade, he was worried how he was going to motivate his students to write. He initially agreed to try out Quill because he saw it as a way to motivate his students. He did not start using Quill because he thought he would be able to teach better with it. Before he agreed, he asked his class's opinion. They brainstormed a list of classroom activities and he asked them which they were most interested in. Having a computer in the classroom was a big favorite.

Joe said he would have liked to know beforehand that Quill would have improved his students' writing; he would have had no hesitation about using it in that case. He found that "Quill not only motivated kids to write...[it] motivated them to come to school...When you have kids waiting for you at 7:30 in the morning, you know you've got something going." Joe got "looks of amazement" from the other teachers when his students showed up early in the morning.

Writing Instruction and Quill use

Joe was quite specific about the changes in his writing instruction which came about as a result of using Quill and/or the new

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Hoover City writing curriculum. First, he commented that he regarded the Planner as the main reason to use Quill rather than just a word processor; he liked the pre-writing, planning and organizing and saw quick results in the way his students organized their writing. Second, he became a quick fan of collaborative writing. In his classroom, students often worked with a partner and other students might watch during the writing process. He saw multiple gains from this practice. (This, by the way, was NOT emphasized in the district writing curriculum; it was strictly a contribution from Quill.) Third, he noticed increased awareness in his students of the purposes of writing, which led to their enthusiasm for their own and other students' writing.

Joe's disappointment was that he had not had enough opportunity to work on revision. His students worked together and critiqued each other's pieces, but they didn't get much input from Joe on revision. As much as he recognized its importance, he always seemed to be anxious to move on to the next writing project - and he always had several next projects in mind. He was more interested in getting ideas going, writing and publishing; his strength was in getting students who wouldn't normally write at all in school to write a lot - even if the grammar and syntax weren't always perfect. Even so, he saw improvement in this skills during the course of the year. He felt this was a result of his students' general growth in language skills and a high transfer of this new knowledge to their writing.

Joe's students wrote in many different genres: they published several issues of a class newspaper, wrote TV scripts for their own soap operas, reviewed school plays and other productions, sent many messages using Mailbag, sent messages to the trainer, wrote holiday poems and wrote long adventure stories. Joe claims that this did not come from his knowledge of different genres, but from the flow of classroom experience..."as our subject matter and our instruction and our experiences were expanding, an idea would strike and we would use the computer to do that."

Joe changed his style of teaching writing in at least one significant way. Instead of grading students' papers, he would check over their first drafts, making sure they had given it "their best shot." Then he would assign students a turn at the computer in the order in which they completed their first drafts. This method provided him a way to manage access to the computer and to check his students' work.

Joe commented on how some students' expressive ability had mushroomed with the computer, yet they still couldn't write correct sentences with vocabulary words. He attributed this in part to their being able to see their text on the screen or printed out, in the form they were

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used to seeing in books. He felt students made an extra effort, keeping dictionaries next to them to check their spelling. These improvement transferred to off-computer writing for some of the students, though not for all.

Joe's favorite Quill assignment was based on a reading selection called "The Reluctant Dragon," which contained lots of very difficult old English vocabulary - words like "direful" and "stramish." The class produced a play, painted a large mural and read parts of the play in other classes. Their assignment was to write their own dragon stories, using as many of the words as possible. They printed the stories on construction paper and illustrated them. Joe called the stories "a blend of inner city dragons and old English vocabulary."

Rewards

Joe obviously found Quill a rewarding addition to his classroom. While he received no recognition from his school or from the parents of his students (the school had to abandon parents' night a few years ago because no one showed up.), the reactions he got from his students were his most important reward. "The interest in computers is seeing some of the growth kids can make," he said and was excited to hear that students who used Quill were better expository and persuasive writers. "That's the name of the game." He was pleased that his students wanted to take their Quill work home and contrasted that with their other work, which he "often found in the bushes."

Continued Quill use

Joe continued to use Quill a second year. That year he had a smaller class - only 27 students - and two computers. That made it easier for him to use the program, but Joe kept thinking of more ways to use the machine and continued to "be in a mess." His original intention had been to use one computer for composition and one for revision, but he "got greedy" and had one project going on each computer. Often he had Mailbag going on constantly on one machine and a Library project on the other.

Joe didn't really learn to use the advanced Writer's Assistance commands until this year. "Typically the kids knew more than I did" and they would sometimes get angry because he would mess up their pieces when he tried to help them. Joe had a system of student experts who were better and faster than he was.

Unfortunately, Joe was less happy with his class's performance on Quill the second year. His first class was a "super bunch of kids" who raised the school's standardized test scores 1 - 1 1/2 years above the year

before. Joe also had a slightly different relationship with his students the second year because he was away for two weeks in June at Army Reserves. A researcher/teacher who had been working with his class for several months took over the class in the interim, but Joe felt he "missed the peak" in his class's writing experiences that year. While he was away, they produced the year's memory book - and he "felt left out."

Institutionalization

There was no sign of institutionalization in Hoover City. The assistant superintendent and vice principal who had initiated Quill both left the system at the end of the first year. This year, Joe is a clinical supervisor for the Madeline Hunter training program and two other teachers were trained to take his place. His assessment,however, was that they were not doing too well because the "were too traditional" and had a hard time having something else going on in the room when they were teaching a directed lesson. He thought Quill was being used only 20 minutes a day. Another teacher who was trained only has a computer one day a week. The other original Quill teacher is still using the program in a gifted/talented resource room. When any of these teachers needs help with the program, Joe is their only source. In many ways, he has become the Local Facilitator for Hoover City.

In addition, Joe is a certified Quill trainer, although he has only done one awareness session so far. Joe has also become a certified Apple technician. He uses his position of helping other teachers with hardware to talk to them about Quill. Joe sees this year out of the classroom as an opportunity to split from teaching sixth grade. Would like to teach in another system and/or take some courses in administration, writing or computers.

In sum, Quill has made a significant difference both in Joe's classroom and in his professional life. However, these effects were due mainly to Joe's interests and energy rather than to any support the school system provided. His students' enthusiasm and improvement, coupled with some assistance from his trainer, led him to make full and creative use of the capabilities of Quill.

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Vignette:

Leslie Grant and Sheila Fisher

Bridgeville

District and Building Characteristics

The Washington School is a large K-8 public school in a working class community in Bridgeville, located in the center of a large Portuguese immigrant community. The school has an ethnically and economically diverse student population. Two sixth grade teachers, Leslie Grant and Sheila Fisher, agreed to participate in a study with a local, well-known university in which researchers observed their classrooms before and after a computer and the QUILL software were introduced. These teachers received different kinds of support from that provided the teachers in the NETWORK study, since researchers were present in their classrooms at least once a week and the teachers regularly participated in project meetings.

The two teachers were suggested by the principal and the language arts coordinator, but it was their own decision whether or not to participate in the study. The project provided the computers, release time for training, and promised that the researchers would be helpful participants in the classrooms when they were not engaged in focused observation. The teachers agreed to participate if only one regular researcher was assigned to each room and would visit only one day a week. Since this worked out well, however, it was later expanded and different researchers spent more time in the classrooms.

Both teachers were very excited and enthusiastic before the training. They were pleased to get a computer in their classrooms and felt that it would provide a good learning experience for their students. Sheila especially liked the idea of having another adult in her class who could help out when necessary and provide some adult companionship. Both teachers felt that they gained some status with the principal and the other teachers in the school by participating in a project that involved computers and included working closely with researchers from the university. The principal himself was friendly and supportive but was not really aware of what was going on in the classrooms. Other teachers expressed some resentment that Leslie and Sheila had computers in their classrooms.

Training: The two teachers and staff developer Iris Hirsch participated in a two-day intensive Quill training workshop at the university at the beginning of February. During the training sessions the teachers were impressed by the slides and stories of a sixth grade classroom using Quill in inner-city Hartford, Ct. They felt encouraged that they could also manage to do

interesting things in their classrooms.

Inservice: The two teachers received regular assistance from Iris, the writing staff developer who serves four Bridgeville public schools. She spent Wednesday each week at the Washington School, and worked with five different teachers during the day. Iris rotated her schedule so that she worked with each teacher for a six week period, coming into his/her classroom to teach a 45 minute writing lesson to the children, modeling for the teacher a "process" approach to writing. The classroom teacher was present during these lessons but did not necessarily participate actively. Iris then provided suggestions to the teacher for tasks to be carried out before her next weekly visit. Besides the six weeks of classroom lessons, Iris also gives release day workshops and after-school feedback and support to teachers.

In her 45 minute lessons once a week, Iris modelled a writing process that included six stages: getting an idea, brainstorming, writing a first draft, revising and editing, producing a final draft, and publishing.

Students were taught to brainstorm about a particular topic by outlining the possible associations and ideas relating to the topic. This outline was used to suggest content for the first draft, which was written on a sheet of yellow paper and had to be double spaced. This first draft was never thrown away and served as the basis for the edited version. After completing the first draft, the student called over one of the adults (either the teacher, Iris or the researcher) to read the text and make corrections (usually punctuation and spelling corrections) with a felt pen.

If the adult and student felt that the edited version was OK, the student could then start on a final draft. The writing process was completed when the student copied the edited version onto a white sheet of paper, this time single spaced. The final draft and all the other drafts were kept in the child's writing folder.

After introducing this process to the students for two weeks, Iris then applied it to different kinds of writing such as Cinquain poems, personal letters, and open ended compositions. She encouraged the students to think about writing for different types of audiences, such as in a classroom newspaper, or to a personal friend. She also brought in examples of students' writing from other schools.

Teachers' writing curriculum goals: Despite the inservice training that these teachers received in the writing process,

both simply appended the process to their own curriculum goals for writing. Both Leslie and Sheila felt that their students needed help with the mechanics of writing -- spelling, punctuation, capitalization, etc. -- in order to be able to write simple paragraphs and letters. They thought the kids had a long way to go in order to reach a basic level of competence in writing. Thus, though Iris worked with them on a process approach to writing, both teachers were quite product oriented.

Leslie Grant

Writing instruction before Quill: Pre-Quill writing activities in Leslie's classroom were based on the model provided by the writing staff developer, Iris. Iris worked in Leslie's classroom for the six weeks following Thanksgiving. Leslie then followed Iris's process model in her own writing assignments to her class. Though Leslie had been somewhat frustrated early in the training and was worried that she would not be able to organize Quill use in her classroom, she was still excited about the possibilities and so were her students. She took the computer home for the weekend after training, became familiar with the programs and the editing commands, and wrote messages to her students.

Classroom Work Environment: Leslie's students wrote within the context of a highly structured time schedule. Each day had separate periods for oral reading, math, spelling and phonics. In addition, each student had specific assignments, called "contract work," which had to be completed each week. The ambiance of the classroom was generally busy; students often felt pressure to complete work quickly.

Within this context, there were several specific writing periods each week, which, although they occurred on different days, were clearly designated for writing. Students were generally expected to complete a first draft in 20-30 minutes. Those who didn't would be expected to complete their drafts in the next regularly scheduled writing period. There was seldom unstructured time in which students could complete writing (or other) assignments at their leisure.

Assignments: Each week, the entire class was given the same writing assignment. Usually, both genre and topic were selected by Leslie. For instance, assignments over the last three months included: review of a school play, an essay summarizing a Ranger Rick article about animals' solutions to problems, review of a

movie, rewriting of nursery rhymes in prose form, a letter written in response to request for advice, and a two-paragraph autobiography. In two assignments, limericks and an ABC composition, students were allowed to choose their own topics, writing within the assigned genre. (In the ABC composition, each sentence was to begin with sequential letters of the alphabet.)

Quill Use: Quill was introduced to the students in Leslie's classroom via the Mailbag, on which Leslie had written messages to individual students. Each student's first experience at the computer consisted of calling up and then reading his or her message. After the first day, however, very little writing was done in the Mailbag. The computer was used exclusively for classroom assignments, and was essentially used as a typewriter with which students typed final drafts of teacher assigned pieces which they had written by hand and edited with the help of their teacher.

After Quill had been in use for a few months, the writing system in Leslie's classroom had come to follow a predictable routine. As the year progressed, the routine continued to incorporate the same elements, but operated more and more smoothly and with less disruption of ongoing classroom activity.

The writing of a piece included several basic steps which were followed on each assignment. These steps followed the writing program presented by the writing staff developer.

Pre-writing: First, students brainstorm and make lists of their ideas, generally using yellow, unlined paper. These ideas sometimes are expressed in sentences, sometimes in a list of words or phrases. Often, this step was preceded by an all-class activity. General topics were listed on the blackboard, and students were instructed to create lists with more specific details on their own brainstorming sheets. In other cases, students were simply told to make a list of the ideas which they wanted to include in their pieces, or to answer questions presented on a dittoed "planner."

First draft: After brainstorming, students wrote a first draft on yellow lined paper, in pencil. They were encouraged by Leslie to read their pieces over and do some editing themselves. Though collaborative writing had been stressed in the Quill training, students did all of their writing individually.

Teacher input (edits:) When students were finished with their draft, they raised their hands, and Leslie and/or the observer approached each kid individually, helping with "edits". Editing at this point generally took the form of corrections in the mechanics of writing -- punctuation, spelling, verb tense,

etc. Less frequently, Leslie suggested changes in sentence order and occasionally suggested elaboration on details. These "editing" conferences generally lasted under two minutes.

Computer Use: Once first drafts were completed and corrected, students were assigned a number for using the computer. Those who finished first entered their edited drafts first; others generally copied their edited first drafts onto white lined paper, creating a hand-written final draft. Students basically used the computer as a typewriter, typing in their corrected copy, and printing copies. Students could stay at the computer as long as they needed in order to enter their piece. Most frequently, students worked alone at the computer but about 30% of the time they worked with a peer "helper." The "helper" would read the draft aloud while the author typed his or her text into the computer.

Computer Access: In theory, given that a handwritten draft was all one needed to get to the computer, everyone should have had about equal access. In practice, however, this was not the case. Students who misbehaved were sometimes denied turns (or moved to the bottom of the list). Students who were frequently absent sometimes missed the initial assignment, sometimes missed their turn at the computer, and sometimes were required to finish other assignments which they missed in other subjects before entering their drafts into the computer.

Changes in the writing system: During the last months of school a few notable changes in the overall writing system did occur. Students produced fewer hand-written final drafts, i.e, they seemed to be typing from first drafts with hand-written edits. Interestingly, Leslie remarked that she saw the hand-written second draft as a form of busywork, used to keep the kids occupied while they waited for their turn on the computer. The fact that this was done less frequently indicates that the computer was being integrated more thoroughly into the classroom's activities. As Leslie was called on to help with computer commands less frequently, she was able to turn her attention to other subjects, thus minimizing the need for computer-generated busywork. The computer was incorporated into the writing system rather than appended to an already complete process.

Other computer use: In addition to the weekly formal writing assignments, Quill was used to produce two issues of a classroom newspaper and for two couplet writing projects. The newspapers represented fairly major departures from the typical classroom routine, with small groups of students collaborating to write different articles. In one of the couplet projects, the class wrote a series of couplets describing different ways people could

be killed or injured. This was based on a poster, and was a project which generated a great deal of enthusiasm. The other couplet project was simply a file of couplets to which studnets could add when they had free time and the computer was not in use. Only four students took advantage of this opportunity to use the computer.

Finally, a few students used the Mailbag to respond to letters written by penpals at another elementary school. However, informal writing at the computer remained a very minor part of the overall writing done in this class. Leslie felt that, although she would have liked the kids to do more informal writing, there was not time for this because students needed the computer time for completing their formal assignments.

Computer-related reading activities: In addition to the writing program, the computer entered into the students' reading activities in three ways. First, they read each other's drafts and final copies as they worked in pairs at the computer. Secondly, during the last month of school, students were assigned to read from Quill Library disks during the daily silent reading period. Finally, Iris brought copies of student writing collected from her classes in various schools. Students in Leslie's class had about 25 minutes to borrow and read books from this mini-library. Their own Alphabet-couplet booklet and newspaper were included in the selections.

Summary of first semester Quill use in Leslie's class: Writing was taught primarily through weekly writing assignments, with genre (and usually topics) assigned by the teacher, in a process which included brainstorming, production of first drafts, "edits" with the help of the teacher, and production of final drafts (by hand and/or on the computer). Students were assigned turns at the computer based on how fast they finished their drafts. Students used the computer almost exclusively for formal assignments which were done in the Quill Library. Students never used the Planner on the computer, and only once did Leslie use it to make paper copies for the students to use at their desks. Mailbag was introduced at the beginning of the semester, but neither the teacher or students used it very much after that.

Changes in Quill use the second year: During the second year of the project (the teacher's second semester of Quill use), Leslie began to use the computer earlier in the writing process. Students entered their first drafts before either they or the teacher edited them, and subsequent revisions were done on the computer. Leslie has also encouraged students to use the Mailbag to write informal messages to each other.

Sheila Fisher

Pre-Quill writing instruction: Iris spent six weeks in Sheila's classroom prior to Thanksgiving. Following this period, Sheila used the system Iris modelled for a couple of assignments. She had the students write up their ideas on "What is Thanksgiving?" and assigned a writing task she called the ABC's of Writing. Students were to brainstorm an idea starting with each letter of the alphabet and write a composition on each topic using the approach Iris had taught. This was the only writing assignment observed through December and January and most kids got no further than writing about their B or C idea. At this point the computer and Quill were introduced into the classroom.

Quill Use: When Quill was first introduced in Sheila's class, the computer was used almost exclusively for "unofficial" writing of messages to classmates using the Mailbag. then introduced the Planner program to help students compose entertainment reviews. A few weeks later they were introduced to Library to type final drafts of these compositions from corrected and recopied handwritten drafts. After that point the writing system incorporated both teacher-assigned writing (both on paper and on the computer) and student-initiated writing. (Planner was not used on the computer after it was initially introduced because was disappointed with the way the kids used it.)

Classroom Work Environment: In Sheila's class time was structured very flexibly -- there was generally no predictable routine. For instance, on some days, writing was the only formal activity; on others the whole day was devoted to math. On days when the only assigned activity was writing, some kids did not complete even a first draft, whereas others completed the whole process very quickly. Some chose to write a second composition in response to the same assignment while others engaged in a variety of free-time activities.

In relation to writing, Sheila seemed to set no limits on how many drafts or compositions students could write for any particular assignment. There were rarely deadlines by which any given assignment would to be completed; what deadlines there were occurred in cases where the work was to be published.

Assignments: Although with each assigned composition Sheila always followed the basic steps of Iris's process approach, there was no predictable weekly writing routine. Nor did there seem to be any prior planning of genre or topic. Ideas for assignments

seemed to occur spontaneously, often triggered by outside events. For instance, the kids saw a school play one Monday and Sheila immediately assigned a review of the production as a writing exercise.

During Iris's time in the classroom, assignments tended to be given on Wednesday to be completed by her next visit the following week. When Iris was not working with the class, Sheila tended to give writing assignments much less frequently. The kids could write as much or as little as they wanted. The only writing assigned between Iris's series of visits allowed the kids complete freedom with respect to genre, topic and number of pieces.

Rather than regular writing assignments, the classroom tended to have periods of peak writing activity and other times when little or no writing was going on at all. Outside events such as Parents' Night, for which Sheila wanted to display computer writing, seemed to be the impetus behind these peak writing periods.

Drafts: As the kids moved from their own brainstorming to first drafts, was heavily involved, but in different ways with different kids. At the early stages of the writing process, she usually wandered about the room, giving help to the strong writers on request and standing over the weak writers brainstorming with them and prodding them to compose a first sentence. She paused by individual desks, pointing out spelling and punctuation errors, sometimes offering correct spellings, sometimes sending the kid to the dictionary.

Once kids were happy with their first draft, they showed it to Sheila immediately. In these conferences, Sheila emphasized expansion and clarification of ideas and the structure of paragraphs. She often asked kids whether their sentences stuck to the main idea or if some sentences had to be moved and expanded into a new paragraph. The first draft then almost always had to be revised substantively, with a new draft written on yellow paper which also had to be shown to . Kids tended to write many, many drafts, and Sheila suggested different kinds of changes on each of them.

Final drafts were copied onto white paper and then entered into the computer.

Peer interaction around writing: Although most revision and editing work resulted from interactions between the teacher and students, kids also gave feedback to one another. They often read each other's writing. Sheila discouraged too much peer involvement at the early stage of the writing process. She liked

the kids to make an independent start on their work and to write in their own voice. However, once a draft was done, she allowed the kids to wander about the room showing their work to their friends, who generally gave praise rather than criticism.

Computer use: Kids also interacted with each other on occasion at the computer as drafts were being entered. They reported that they liked to have their friends point out typographical errors as the text was entered, so that they wouldn't have to delete large sections of text in order to make corrections.

Sheila had introduced the whole class to the Mailbag, Planner, and Library, but she did not teach any of the editing commands, so the computer was not used for revising. The students used it primarily as a typewriter to enter their final drafts. Also, only one student learned any editing commands, and he did not teach these to the other students. However, there were occasions when computer-produced text needed to be changed since students often rewrote even the final draft. On five separate occasions, Sheila asked kids to make changes on drafts already on Library disks. When this happened, kids would retype the whole draft, making corrections as requested rather than returning to the original file and editing it.

Access to the computer: In general, the computer could be used on request -- students who wished to work on the computer simply asked for permission. This system made it possible for those kids who were fearful of the computer to avoid using it. However, there were were some restrictions to computer access. Library, used for teacher-initiated writing, always took precedence over Mailbag. Sometimes, when under deadline pressure, Sheila would assign kids turns rather than trust that those who owed her work would be responsible enough to request a turn. She assigned turns by getting the attention of the whole class and asking who still had to type their work. She put those names up on the board, and trusted them to remind each other to take their turns.

There were also times when no kid was allowed to use the computer, such as when Iris was working with them or some other visitor was in the room. Other classroom activities such as Spelling or Math could be missed for computer work; kids were expected to catch up on those subjects at some other point in the school day.

Summary of 1st semester Quill use: Early computer writing consisted of short messages, usually no longer than two sentences. Sheila did assign students to write more formal "thank-you notes" also using the Mailbag. She also introduced

them to the Planner, but did not use it more than once during the semester. Other assignments during this time included reviews of the Grammy awards show and a school play, but many of the students never even entered these reviews into the Library. Those that did enter their pieces used the computer as a typewriter to print out their final drafts and never used the editing commands to do any revision since they were unfamiliar with them. If any further changes were needed after the piece was typed in, students simply began all over again and typed the entire piece in from scratch.

Changes in 2nd semester: More writing was assigned to be entered in the Library although Sheila's students still use Mailbag extensively. There is more entering of first drafts and editing on the computer in Sheila's room, but Sheila herself has not learned the cvommands. Rather, she has appointed several boys as editing experts, and they have helped the rest of the class.

APPENDIX B: Instrumentation

Issues Guide: QUILL Study

I. Teacher characteristics

A. Teaching experience

1. length of time and assignments at current school
2. length of time and assignments at other schools
3. previous jobs other than teaching
4. experience using microcomputers
5. experience using aspects of process approach to writing
6. experience using flexible classroom structure, scheduling

B. Personal characteristics

1. age
2. marital status, children (i.e., home situation)
3. where grew up
4. education level, specialty(ies)
5. inservice activity (i.e., recent courses taken, particularly in microcomputers and writing instruction)
6. attitude toward teaching -- career goals
7. personality (e.g., energy level, cosmopolitan/provincial, outgoing/shy, creative/conforming, etc.)
8. professional image: strengths and weaknesses

C. Teaching style

1. approach to writing instruction before and after QUILL
2. degree of structure in classroom
3. interaction with students (e.g. with groups vs. individuals, boys vs. girls; quality, style, tone)
4. degree of freedom given students (i.e., opportunities for self-direction)
5. level of thinking encouraged (e.g. questioning style)
6. level of control over student behavior/misbehavior
7. variety in materials and approaches used

D. Attitudes and concerns about QUILL

1. technology
2. writing
3. classroom management
4. applicability to individual classroom and student population

II. Characteristics of "significant others" (e.g., principal, assistant principal, resource teacher, teacher's team mate, district level coordinator)

A. Experience

1. length of time in this role at current school/district* and other schools/districts
2. length of time in other roles at current school/district and other schools/districts
3. previous non-education jobs
4. experience with microcomputers and process approach to writing

*Use "district" only when person is located at district level

B. Personal Characteristics

1. age
2. marital status, children (i.e., home situation)
3. where grew up
4. education level, specialty(ies)
5. inservice activity (i.e., recent courses taken, particularly in microcomputers and writing instruction)
6. attitude toward teaching -- career goals
7. personality (e.g., energy level, cosmopolitan/provincial, outgoing/shy, creative/conforming, etc.)
8. professional image: strengths and weaknesses

C. Style of interaction with teacher(s) (e.g., authoritarian/ laissez-faire, distant/close, active/passive)

D. Attitudes and concerns about QUILL

1. technology
2. writing
3. classroom management
4. applicability to individual classroom and student population

III. Organizational context: School and district

A. Demographics (e.g., number and type of students, community wealth, racial/ethnic make-up)
B. Political climate (e.g., turbulent/stable, support for schools)
C. Influence/activity of teachers' unions
D. Authority structure
E. Procedures for decision-making and problem-solving
F. Climate (e.g., warmth, staff communication style and frequency, creativity, collegiality of staff)
G. Norms (e.g., for teacher initiation or involvement in new projects)
H. Opportunities for staff development and professional growth

IV. Assistance and support for QUILL (from district people, local facilitator, QUILL trainer, parents, others)

A. History of involvement with QUILL: who, what, when
B. People providing help to teachers (roles, responsibilities)
C. Kinds of help given teachers (front-end, back-end)
D. Material support for QUILL (what, when, from whom)
E. "Tone" of assistance (i.e., give answers/help problem-solve, active/passive, evaluative/nonjudgmental)

V. Rewards, incentives, disincentives

A. Personal motivations of teachers to begin and continue to use QUILL (i.e., reasons for adoption, implementation, continuation)
B. Incentives created for teachers to participate (by whom, what)
C. Rewards/sanctions experienced by teachers (from whom, what)
D. Disincentives inhibiting teachers from using QUILL, or using it fully

VI. Classroom use of QUILL

A. Extent of implementation of QUILL components
B. Use of QUILL in different content areas
C. Mastery level of teacher (e.g., Level of Use)
D. Quality of QUILL use (e.g., pervasiveness in classroom, creativity of assignments, enthusiasm of students, quality and variety of writing)
E. Effect of student attitudes on teacher (e.g., effect of student attitudes on frequency of writing assignments)
F. Teachers' interaction with students using QUILL (i.e., compared to other activities?)

QUILL Implementation Study

Teacher Interview

I. Teaching experience

1. length of time and assignments at current school
2. length of time and assignments at other schools
3. previous jobs other than teaching
4. experience using microcomputers
5. experience using aspects of process approach to writing
6. experience using flexible classroom structure, scheduling

*II. Use of QUILL

Question: Please describe for me how you're using QUILL.

Probes for Components:

1. Frequency. How often do you use QUILL? (daily, etc.)

2. Time. How much time per week does each student get to use QUILL?

3. PLANNER. Do you use PLANNER? If yes, how? If no, do you do pre-writing activities?

4. Programs. Do you use LIBRARY more than MAILBAG, or visa versa?

5. Genres. What kinds of writing assignments do you give your kids? (ask for examples; looking for different genres and audiences)

6. Audiences. Who do your kids write to?

7. Composing. Do the kids compose at the computer? If yes, do they do so more than half the time?

8. Marking. Do you "mark" (i.e., revise) the things that they write? If yes, what kinds of things do you mark? Do you make any suggestions on their papers?

9. Teaching Revision. Do you teach your kids how to revise? If yes, how often? What do you teach them?

10. Conferences. Do you have individual conferences with your kids about their writing? If yes, how often?

11. Revision Frequency. Do your kids revise their writing using QUILL? If yes, more than half the time?

*Be sure to get in first visit; other questions can wait if necessary.

12. Revision Kinds. What kinds of revisions do your kids make in their writing? (Check for balance between content and mechanics.)

13. Pairs. Do your kids work in pairs? If yes, how much of the time? If yes, in composing? editing? revising?

14. Sharing. Is your kids' writing shared? If yes, how?

15. Integration. Do you use QUILL for writing in content areas? If yes, frequently? If no, do your kids ever write in content areas without QUILL?

16. Who. Do all of your students use QUILL? If no, which ones do? (gifted, high group, low group, etc.)

17. Arrangement. Is your computer in your classroom? If yes, what percent of your instructional time are kids using it for QUILL? If no, do you use learning centers?

*III. Level of Use

Question: Please describe for me the strengths and weaknesses of QUILL.

Question: Have you made any changes in how you've used QUILL in the last few months?

If yes, please describe.

If yes, why? (for each change noted)

* IV. Attitudes/Concerns about QUILL

(May not need to probe each area)

1. technology
2. writing
3. classroom management
4. applicability to individual classroom and student population

V. Teaching writing before QUILL

Question: I'm interested in how your teaching of writing was different before you started to use QUILL. Can you describe how you taught writing last year/before QUILL?

Probes for Components:

1. Frequency. How often did your kids write? (daily, etc.)

2. Pre-writing. Did you use pre-writing activities?

5. Genres. What kinds of writing assignments did you give your kids? (ask for examples; looking for different genres and audiences)

6. Audiences. Who did your kids write to?

8. Marking. Did you "mark" (i.e., revise) the things they wrote? If yes, what kinds of things did you mark? Did you make any suggestions on their papers?

9. Teaching Revision. Did you teach your kids how to revise? If yes, how often? What did you teach them?

10. Conferences. Did you have individual conferences with your kids about their writing? If yes, how often? Did kids conference with each other about their writing? If yes, how often?

11. Revision Frequency. Did your kids revise their writing?

12. Revision Kinds. What kinds of revisions did your kids make in their writing? (Check for balance between content and mechanics)

13. Pairs. Did your kids work in pairs? If yes, how much of the time? If yes, for composing? editing? revising?

14. Sharing. Was your kids' writing shared? If yes, how?

15. Integration. Did your kids write in content areas?

16. Arrangement. Did you use learning centers? If yes, did you have a computer in your room that was used as a learning center?

VI. Personal characteristics

1. marital status, children (i.e., home situation)
2. where grew up
3. education level, specialty(ies)
4. inservice activity (i.e., recent courses taken, particularly in microcomputers and writing instruction)
5. attitude toward teaching -- career goals

VII. Teaching style (probe only after observation)

1. degree of structure in classroom
2. interaction with students (e.g., with groups vs. individuals, boys vs. girls; quality, style, tone)
3. degree of freedom given students (i.e., opportunities for self-direction)
4. level of thinking encouraged (e.g., questioning style)
5. variety in materials and approaches used

*VIII. Rewards, incentives, disincentives

1. Personal motivations of teacher to begin and continue to use QUILL (i.e., reasons for adoption, implementation, continuation)

2. Incentives created for teacher to participate (by whom, what)

3. Rewards/sanctions experienced by teacher (from whom, what)

4. Disincentives inhibiting teacher from using QUILL, or using it fully

* IX. Assistance and support (received and given) for QUILL (from district people, local facilitator, principal, QUILL trainer, parents, other teachers, others)

1. History of involvement with QUILL: who, what, when

2. People providing help (roles, responsibilities)

3. Kinds of help (front-end, back-end)

4. Material support for QUILL (what, when, from whom)

5. "Tone" of assistance (i.e., give answers/help problem-solve, active/passive, evaluative/nonjudgmental, authoritarian/laissez-faire, distant/close)

6. Attitudes and concerns of others about QUILL

X. Characteristics of organizational context: school and district

1. Authority structure

2. Procedures for decision-making and problem-solving

3. Climate (e.g., warmth, staff communications style and frequency, creativity, collegiality of staff)

4. Norms (e.g., for teacher initiation or involvement in new projects)

5. Opportunities for staff development and professional growth

*XI. Teacher's perception of classroom use

1. Quality of QUILL use (e.g., pervasiveness in classroom, creativity of assignments, enthusiasm of students, quality and variety of writing)

2. Effect of student attitudes on teacher (e.g., on frequency of writing assignments)

3. Teacher's interaction with students using QUILL (i.e., compared to other activities)

QUILL IMPLEMENTATION STUDY

Significant Other Interview*

I. Characteristics of significant others

A. Experience

1. length and time in this role at current school/ district** and other schools/districts

2. length of time in other roles at current school/ district and other schools/districts

3. previous non-education jobs

4. experience with microcomputers and process approach to writing

B. Personal Characteristics

1. marital status, children, (i.e., home situation)

2. where grew up

3. education level, specialty(ies)

4. inservice activity (i.e., recent courses taken, particularly in microcomputers and writing instruction)

5. attitude toward teaching -- career goals

C. Style of interaction with teacher(s) (e.g., authoritarian/ laissez-faire, distant/close, active/passive)

D. Attitudes and concerns about QUILL

1. technology

2. writing

3. classroom management

4. applicabiity to individual classroom and student population

*Use with principal, district staff/local facilitator, other support people

**Use "district" only when person is located at district level

II. Organizational context: School and district

1. Demographics (e.g., number and type of students, community wealth, racial/ethnic make-up)
2. Political climate (e.g., turbulent/stable, support for schools)
3. Influence/activity of teachers' unions
4. Authority structure
5. Procedures for decision-making and problem-solving
6. Climate (e.g., warmth, staff communication style and frequency, creativity, collegiality of staff)
7. Norms (e.g., for teacher initiation or involvement in new projects)
8. Opportunities for staff development and professional growth

III. Assistance and support for QUILL: What they <u>give</u> and what they <u>get</u>

1. History of involvement with QUILL: who, what, when
2. People providing help to teachers (roles, responsibilities)
3. Kinds of help given teachers (front-end, back-end)
4. Material support for QUILL (what, when, from whom)
5. "Tone" of assistance (i.e., give answers/help problem-solve, active/passive, evaluative/nonjudgmental)
6. Style of interaction with teachers (e.g., authoritarian/laissez-faire, distant/close, active/passive)

IV. Rewards, incentives, disincentives.

1. Personal motivations to be involved with QUILL
2. Incentives created for teachers to participate (by whom, what)
3. Rewards/sanctions given to teachers (from whom, what)
4. Disincentives inhibiting teachers from using QUILL, or using it fully

V. Perception of style of teachers in study (if appropriate)

1. Approach to writing instruction

2. Degree of structure in classroom

3. Interaction with students (e.g. with groups vs. individuals, boys vs. girls; quality, style, tone)

4. Degree of freedom given students (i.e., opportunities for self-direction)

5. Level of thinking encouraged (e.g., questioning style)

6. Level of control over student behavior/misbehavior

VI. Classroom use of QUILL for teachers in study (if appropriate)

Perception of:

1. Quality of QUILL use (e.g., pervasiveness in classroom, creativity of assignments, enthusiasm of students, quality and variety of writing)

2. Effect of student attitudes on teacher (e.g., on frequency of writing assignments)

3. Teachers' interaction with students using QUILL (i.e., compared to other activities)

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Practice Profile: QUILL

Probes

Component 1: Frequency of Use			
(1)	(2)	(3)	(4)
Students use QUILL daily.	Students use QUILL several times a week.	Students use QUILL once a week or less.	Teacher does not use QUILL, but students write a. daily b. several times a week c. once a week or less

Component 2: Scheduling of QUILL			
(1)	(2)	(3)	(4)
Teacher arranges schedule to allow for maximum use of QUILL during day, such that each student uses QUILL at least one half hour per week for composing and/or revising, alone or in pairs.	Students each spend at least one half hour every two weeks using QUILL.	Students spend less than an average of one half hour every two weeks using QUILL.	Students never use QUILL.

Component 3: Use of PLANNER			
(1)	(2)	(3)	(4)
Teacher uses PLANNER in a variety of ways: e.g., creating pre-writing activities for students; having students create PLANNERS for themselves or other students.	Students create PLANNERS for their own writing assignments, and/or for each other.	Teacher uses PLANNER to create pre-writing activities for students.	Teacher does not use PLANNER, a. but includes planning activities prior to writing b. and does not use other pre-writing activities

Component 4: Use of LIBRARY and MAILBAG			
(1)	(2)	(3)	(4)
Averaged over the school year, teacher uses MAILBAG and LIBRARY equal amounts.	Teacher uses MAILBAG more than LIBRARY, averaged over the school year.	Teacher uses LIBRARY more than MAILBAG, averaged over the school year.	Teacher does not use a. LIBRARY b. MAILBAG

Anything to the right of solid line is "unacceptable"; to the left is "acceptable".
Anything to the left of dashed line is "ideal".

				Probes
Component 5: Writing in Different Genres				
(1)	(2)	(3)		
Teacher gives students QUILL writing assignments in several different genres.	Teacher gives students QUILL writing assignments in one or two genres.	Teacher does not use QUILL but a. students typically write in several different genres. b. students only write in one or two genres.		(Probe for which genres)
Component 6: Writing for Different Audiences				
(1)	(2)	(3)	(4)	
Students use QUILL to write to several different and real audiences.	Students rarely use QUILL to write to different audiences.	Students rarely use QUILL to write to real audiences.	Teacher does not use QUILL, but a. students write to different audiences b. students write to real audiences	(Probe for examples)
Component 7: Composing at the Computer				
(1)	(2)	(3)		
Students compose at the computer at least half the time they use QUILL.	Students compose at computer less than half the time they use QUILL.	Students do not compose at computer.		(Probe for which programs)
Component 8: Teacher's Revising				
(1)	(2)	(3)	(4)	
Teacher's revising reflects a balance between content and mechanics.	Most of teacher's revising focuses on content.	Most of teacher's revising focuses on mechanics.	Teacher never revises student writing.	

Anything to the right of solid line is "unacceptable"; to the left is "acceptable".
Anything to the left of dashed line is "ideal".

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Component 9: Teaching Revision			
(1)	(2)	(3)	(4)
Teacher conducts lessons in revision, repeating them periodically.	Teacher teaches revision early in the year, with no further lessons.	Teacher never teaches revision.	
Component 10: Conferencing			
(1)	(2)	(3)	(4)
Teacher meets with each student at least once every two weeks to discuss writing that is in process; students discuss each others' writing as often.	Teacher meets with each student less than once every two weeks to discuss writing; students discuss each others' writing as often.	Teacher meets with each student less than once every two weeks to discuss writing; students do not conference with each other.	Teacher does not conference with each student.
Component 11: Frequency of Student Revision			
(1)	(2)	(3)	(4)
Students revise more than half of their writing using QUILL.	Students revise less than half their writing using QUILL.	Students do not revise using QUILL, but they do revise without the computer.	Students do not revise.
Component 12: Nature of Student Revision			
(1)	(2)	(3)	(4)
Student revision reflects a balance between content and mechanics.	Student revision focuses only on content.	Student revision focuses only on mechanics.	Students do not revise.

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Probes

Component 13: Working in Pairs

(1)	(2)	(3)
Students compose, edit, and revise in pairs for more than half of the writing they do.	Students compose, edit and revise in pairs for less than half of the writing they do.	Students do not a. compose in pairs b. edit in pairs c. revise in pairs

Component 14: Sharing Writing

(1)	(2)	
Students frequently share their writing through collections such as newspapers, by posting on bulletin boards, or reading aloud.	Students rarely if ever share their writing.	(Probe for means of sharing)

Component 15: Integration with Other Content Areas

(1)	(2)	(3)	(4)
Students frequently use QUILL for writing in content areas.	Students infrequently use QUILL for writing in content areas.	Teacher never uses QUILL for writing in content areas, but students write in content areas without QUILL.	Students never write in content areas.

Component 16: Students using QUILL

(1)	(2)	(3)	(4)
All students in classroom use QUILL.	About half of the students use QUILL; these are a. gifted or high achieving students b. learning disabled students or low achieving	Fewer than half of the students use QUILL; these are a. gifted or high achieving students b. learning disabled or low achieving students c. other special group	No students use QUILL.

Anything to the right of solid line is "unacceptable"; to the left is "acceptable".
Anything to the left of dashed line is "ideal".

Component 17: Classroom Structure				
(1)	(2)	(3)	(4)	(5)
Teacher sets up computer in a learning center arrangement such that students have access to QUILL at least 80% of instructional time.	Teacher sets up computer in a learning center arrangement such that students have access to QUILL at least 50% of instructional time.	Teacher sets up computer in a learning center arrangement such that students have access to QUILL less than 50% of instructional time.	Teacher uses computer in a learning center but not for QUILL.	Teacher a. does not use learning centers b. does not have a computer in a learning center

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DATA CODES: TEACHER INCENTIVES PROJECT

CHARACTERISTICS OF INDIVIDUALS (T=teacher, BP =building people, DP=district people, OP=outside people)

TC:X/G	BPC:X/G	DPC:X/G	OPC:X/G	General experience
TC:X/W	etc.			Writing experience
TC:X/C				Computer experience
TC:S/T				Teaching style
TC:S/M				Management style
TC:PI				Professional image
TC:CON				Non-QUILL-related attitudes, concerns, feelings
TC:PLN				Non-QUILL-related planning

ORGANIZATIONAL CONTEXT = OC (B=building, D=district)

OC:B/IN	OC:D/IN	Innovativeness
OC:B/ND	etc.	Endorsement
OC:B/DM		Decision making
OC:B/PD		Professional development
OC:B/C		Climate
OC:B/D		Demographics
OC:B/RR		Roles and responsibilities
OC:B/CU		Curriculum
OC:B/G		Goals
OC:EX		Influence from the outside (union, state, community)

IMPLEMENTATION PROCESS = IP All QUILL-related

IP:CON	QUILL-related attitudes, feelings, concerns
IP:MOT	Motivation
IP:X/PRE	Experience pre-implementation
IP:X/INIT	Experience in initial implementation
IP:X/LTR	Experience in later implementation (after 6 mo.)
IP:CI	Critical incident
IP:PR	Problem
IP:LOU	Level of Use
IP:PLN	QUILL-related plans for future

ASSISTANCE = AS

Who Codes		What Codes		When codes
R	researcher	$	money	PRE
T	trainer	PH	physical	INIT
SB	school board	IN	instructional	LTR
DA	district administrator	PSI	psychic	
DC	district curriculum	L	linking	
PR	principal			
OT	other teacher			
LF	local facilitator			
PT	parent			
O	other			

OUTCOMES = OT (T=teacher, S=student)

OT:T/AT	OT:S/AT	Attitudes
OT:T/SK	etc.	Skills
OT:T/R		Rewards
OT:O/CL		Classroom organization
OT:O/B		Building organization
OT:O/D		District organization

INNOVATION CHARACTERISTICS = IC

IC:W/PS	Writing process
IC:W/PD	Writing product
IC:C	Computer
IC:CM	Classroom management
IC:#	Code by number of component on Component Checklist

PATTERN CODES

COOR	Coordination among users, relationship of teachers to each other, coordination between internal and external to school

NOTE: Code lack of something by using a minus (-) sign

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QUILL Meets the Classroom: How Teachers Adapt Innovations

Over the past few years, the teaching of writing has been the focus of a growing body of work. Out of the work of Emig, Elbow, Graves, Calkins, Florio and colleagues, a vision of a process-oriented writing classroom has emerged. Thousands of teachers have been trained in the process approach to teaching writing and the changes that some successful teachers go through have been documented (Pierce, 1984; Hubbard, 1984). Most of these studies, however, have looked at only one or two teachers. From the literature on school innovation and improvement there is a legacy of more general studies investigating the multiple fates which may await innovations and the multiple factors which may determine that fate. Such studies have looked at the roles of personal and organizational incentives, change agents, perceived rewards, support systems, and even disincentives. They have not analyzed in depth, however, the content of the innovation or how it interacts with individual teachers' instructional practices and educational goals. We have attempted in this study to use both paradigms - to examine carefully the effects of a computer-based writing instruction innovation on the classrooms of a group of 15 upper-elementary school teachers across the country. Our goals are: 1) to identify patterns in teachers' implementations of a computer-based writing curriculum and to attempt to identify variables which might account for differences among those patterns and 2)to identify those aspects of this writing innovation which were most "vulnerable" to change.

Berman et al (1975) view the process of innovation implementation as one of mutual adaptation. They acknowledge that no innovation is ever adopted without change - and that innovations which do not demand change of their environment are neither very important or very likely to last. Thus, we conceptualize the interaction between teacher and Quill simply as in Figure 1. A more complex conceptualization is shown in Figure 2; this diagram identifies specific aspects of the context which influence the innovation's fate.

The next section describes the innovation we studied and the procedures we followed. We will then describe the characteristics of writing instruction which we designated as the relevant dimensions of implementation and compare how these are represented in Quill and a

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training session in the writing process. We will discuss the results of the study from three perspectives: patterns in teachers' writing instruction and in changes in their writing instruction; aspects of Quill which are most vulnerable to change; and changes over time in the implementation of several dimensions of Quill.

2. Quill: microcomputer-based writing activities

This section will be drawn from literature describing Quill which is distributed to teachers and researchers. It describes the four parts of Quill - Library, Mailbag, Planner and Writer's Assistant - and the kinds of activities that might take advantage of each. It discusses how Quill embodies different aspects of the writing process, emphasizing the fact that these aspects do not occur in a linear and fixed fashion. In addition, it tells about the Teacher's Guide and the training plan.

3. Procedures

This section, drawn primarily from our final report, will describe the site selection, instrument preparation and data-collection procedures we followed in preparing our case studies.

4. Dimensions of implementation

This section will list the dimensions along which we ranked the individual teachers' implementations. (See Figure 3.) These include six dimensions which focus primarily on Quill itself, recording whether each component of Quill was used, whether the computer was used by all of the students most of the time and whether students actually composed at the computer or copied from handwritten drafts. The other nine dimensions are more general, referring to the writing instruction which took place in the classroom. In discussing these dimensions, it will be relevant to consider the similarities and differences between Quill (and Quill training) and writing institutes such as those held by the Bay Area Writing Project or Donald Graves' group. We will mention the differences in length of training (most writing institutes are much longer and involve more writing), perceived focus of the training (some teachers regarded Quill as a computer innovation, not a writing innovation), student and teacher motivation (computers are a great motivator, often working especially well for students who are difficult to motivate otherwise), and degree of reification of the concepts involved (Quill's components provided a certain amount of concreteness to the writing process ideas).

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5. Patterns in Teachers' Implementations

This section will draw from the section in the final report on the cross-case analysis of implementation. It will describe the four patterns listed there: problematic users, superficial users, solid users, and super users. It will further consider the amount of change that teachers had to undergo to implement Quill and the writing process in their classrooms. We will identify several change patterns: extensive change, often occurring in conjunction with other changes in the teacher's professional life (Joe Armstrong); unconscious change, fueled both by the capabilities of Quill and by students' reactions to the program (Lily Porcello); slow change, requiring an extended period of time and hefty support (Leslie Grant); fine-tuning change in classrooms where writing instruction was already close to that embodied in Quill (Robert King, Janet Vandermeer). A tentative "result" which follows from this discussion is an image of a teacher who is a "good bet" for implementing Quill: interested in writing, curious about computers, able to deal with technology (not computer-phobic). Another pattern to note is that Quill was most successful when someone could make the curriculum/computer connections. This could take place at the district, school or individual level, but it was an important prerequisite for Quill to be more than superficially successful.

6. Patterns in Writing Process Implementation

Another way to look at teachers' implementations of Quill is to note which aspects of writing instruction were least and most often present in the classroom. In our population, the most often implemented aspect of Quill was the Library. Teachers also included pre-writing, writing in different genres and collaboration in their writing programs. Library was an often-used part of Quill because it fit best into any writing approach, traditional or process-oriented. Some teachers used Library as a "fancy typewriter," while others were more creative in having students compose at the computer and go through several drafts of their pieces. Pre-writing had been a part of some teachers' programs before Quill, in that they prepared their students for writing through discussion. For those teachers who had not done much pre-writing, it was an easy change to make. It fit into a whole-class instructional approach and, in fact, was not even dependent on the computer. One teacher (Robert King) used some of the pre-writing techniques he learned at his Quill training session while waiting for his computer equipment to arrive. The prevalence of "writing

APPENDIX C: Outline for Article on Changes in Teachers' Writing Instruction to be submitted to Research in the Teaching of English and Journal of Educational Computing Research

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in different genres" in teachers' classrooms is similar in that it is often part of traditional writing program; students often write letters, poems and reports.

The frequency of collaboration in writing in Quill classrooms is another, more interesting story. Many of the teachers had not included collaborative writing as part of their instruction previously. They were forced to allow students to work together at the computer because there was only one machine for a large roomful of students. Many teachers, however, noted that students seemed to write better when they wrote together, helping each other with ideas and particularly with mechanics. Thus many teachers incorporated collaboration into their writing instruction more generally and commented to interviewers explicitly on the success of that change in their classrooms. (Tom Heart, especially).

Those aspects of Quill and process writing which were least often implemented were: Planner, revision and the use of Quill across the curriculum. While some teachers felt Planner was the main thing that differentiated Quill from a word processor, others felt they could do similar exercises on paper and preferred to keep the computer available for compositions. Still others felt the whole exercise was a waste of time. Revision seemed to be a particularly difficult concept and practice to institute in most classrooms. The primary reason seems to be that most teachers confuse revision and editing and have been trained only to do the latter. They have not learned to comment on writing from a point of view other than mechanical. This is an issue which must be addressed primarily with additional training. Finally, teachers seemed to have trouble thinking about writing in contexts other than English class; those teachers who included writing in science, math or social science were the exception.

A final comment in this section will speculate on what "the writing process" has come to mean as it applies to writing instruction. Many teachers seem to think that if they include a pre-writing phase and allow their students to write more than one draft, they have created a "writing process classroom." All that is left of the rich classroom descriptions of Graves et al is the fact that a process may have more than one step. Many teachers' implementations freeze the few steps they have identified into a rigid order and leave out the important aspects of sharing writing, collaboration, revision, conferencing and topic choice. We must take care that the term "writing process" does not become an empty phrase denoting the process of outlining, composing and editing.

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7. Changes in Quill Implementation Over Time

Describing a classroom using Quill at only one point in time is misleading, since teachers and classrooms continue to change. This section will describe some of the changes in writing instruction which took place over longer periods of time. In particular, we will note that those aspects of Quill which are most divergent from more traditional writing instruction went through several stages of implementation, with the first quite far from the desired endpoint and later implementations coming closer. For example, teachers sometimes added collaboration to their classrooms first by having one student read a piece for an author while he typed it, acting as a "computer helper." The reader would often also watch the screen to catch typing errors and would start to make comments on the piece itself. Later in the year, the teacher might make collaboration more formal by, for example, having teams of students work on articles for a class newspaper. We will discuss here several examples of this kind of gradual modification of classroom instruction.

8. Effects on student writing

The most important question, of course, is what effect these changes in classroom practice have on students' writing. We will describe in this section the evaluations that have been done of Quill. The most formal was the field test, which showed that Quill students improved their expository and persuasive writing significantly more than control students. In addition, we report the results of a similar evaluation done by a teacher in an Alaskan village in a class of students in grades 3 through 6. Finally, we will compare two classrooms from the same school (Washington School in Bridgeville) where different patterns of Quill use seemed to result in different results on genre-specific aspects of a writing test.

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Dimensions of Implementation

1. Use of LIBRARY	)	
2. Use of PLANNER	)	QUILL
3. Use of MAILBAG	)	aspects
4. Use by all students	)	
5. Used most of the time	)	
6. Composing at the computer	)	

7. Pre-writing
8. Different genres
9. Different audiences
10. Conferencing
11. Revision
12. Collaboration
13. Sharing writing
14. Writing across the curriculum
15. Student topic choice

Types of Users

1. The problematic user
2. The superficial user
3. The solid user
4. The super user

Categories of change

1. Extensive change
2. Unconscious change
3. Slow change
4. Fine-tuning change

"Best bet"

Combine computers and writing

Most often implemented

1. Use of LIBRARY
2. Pre-writing
3. Different genres
4. Collaboration

Least often implemented

1. Use of PLANNER
2. Revision
3. Writing across the curriculum

Transformations of implementation dimensions

collaborative writing ---› computer helpers

revision ---› editing

topic and genre choice --› only within Mailbag --› allowed within newspaper

sharing writing --› posting printed copies --› reading LIBRARY entries from the computer

word processing for revising --› word processing for typing